





# NEWS IN SUMMARY

## Death in snow: PCs suspended

Two police constables have been suspended from duty over the death of a man aged 26 whose body was found buried in deep snow in the borough of the City of London. The body of Mr Tony Wilson, who was last seen at his home in a police car, was found in a snowy field on the city outskirts in freezing conditions. A coroner's inquest is being held into the death. A report will be submitted to the Procurator General.

## Ministers help in air-fares fight

The Government is to support the argument at the European Council of Ministers of Lord Bessborough, Conservative MP for London, North-West, that certain aspects of the present arrangements for fixing European air fares are against EEC competition rules. The notification that the Treasury Solicitor wishes to accept is intended as a warning to the European Commission that Britain is prepared to fight in the courts for cheaper fares and fewer restrictions on European air traffic. Lord Bessborough will meet Frans Andriessen, responsible EEC commissioner, today.

## Food firms' plea over CAP

The Food Manufacturers' Federation yesterday renewed its call for changes in the EEC's common agricultural policy, to make it more responsive to the realities of supply and demand. It comes on the eve of the annual round of negotiations on farm price increases. The European Commission is expected to make its recommendations tomorrow or on Monday.

## Colleges face cash cuts

High-speeding polytechnics and colleges are to get far less money under the Government's new system of funding higher education outside the universities (Diana Geddes writes). The Government is expected to announce on Monday the distribution of the higher education pool which for some institutions will involve a 16 per cent cut in real terms compared with 1980-81.

## Political levy tops £100,000

More than £100,000 has been raised towards the £250,000 target of a union-controlled levy fund set up last September to aid the Labour Party between now and the next general election, it became known yesterday after a meeting of Trade Unions for a Labour Victory (TULV) (Our Labour Correspondent writes).

## 'Sunday Times' staff changes

The Sunday Times announced yesterday that Mr Brian MacArthur, executive editor (news) of the Times, has been appointed joint deputy editor of the Sunday Times, with effect from next week. He will replace Mr Ronald Hill and will edit the paper in the absence of the editor, Mr Frank Giles. Mr Hill, who is also editor of the Sunday Times Colour Magazine, is now inquiring his position to take up other duties with Times Newspapers Ltd. Mr Giles said last night that there had been a shake-up in top editorial positions with a view to strengthening the paper "at a time when circulation, along with that of other quality Sundays, is falling and the company is in serious financial trouble". He said The Sunday Times was selling about 1,250,000 copies at present, which was 6 per cent lower than a year ago, compared with a drop of nearly 9 per cent for The Observer and 12 per cent for The Sunday Telegraph.

# Civil court fees increase is considered

By Anthony Bevis, Political Correspondent

Substantial increases in the higher judiciary were met from the Consolidated Fund to as to emphasize the independence of the judiciary from the executive, and it therefore appeared inappropriate to include them in a departmental account.

But the controller also reports that there had been a long-standing dispute between the Lord Chancellor's Department and the Treasury over the extent to which the books should be balanced for civil proceedings in the courts.

Successive Lord Chancellors have argued against increases beyond limited costs because of the social benefit conferred by the court service, and the danger that excessive fees could lead to a denial of justice to poorer litigants.

The fees which are now to be assessed by officials and ministers include charges made for probate, matrimonial proceedings, debt recovery and bankruptcy.

Mr Downey says: "The costs taken into account in fixing fees are limited, since they do not seek to recover any part of the salaries, pensions and associated administrative expenses of the judiciary. Nor are the fees set so as to recover full expenditure on allied services such as accommodation, staff pensions, investment expenses and banking services."

An unpublished account drawn up by the Lord Chancellor's Department for 1980-81 showed that fees and other income from civil business brought in £68.3m, with a deficit amounting to an estimated £22m. Estimated receipts for the current year were put at £74m.

The Lord Chancellor's Department told Mr Downey that the salaries and pensions of Circuit Judges and the

## Plot to kill Thatcher is denied

A teenager denied at the Central Criminal Court yesterday that he intended to kill the Prime Minister when he broke through Parliament's tight security armed with a knife.

Nigel Eastmond said he planned to make a "personal protest". "Killing had just not entered my mind—or doing violence to anyone."

"I do not have any feelings towards Mrs Thatcher at all," Mr Eastmond said in evidence. "Taking things on a political basis may be I may have, but personally no."

Mr Eastmond, aged 18, of Queens Drive, Finsbury Park, north London, has denied threatening to kill Mrs Thatcher, and has denied threatening to kill Mrs Thatcher, and has denied threatening to kill Mrs Thatcher.

The prosecution alleges he set out on a personal mission to kill Mrs Thatcher, and that he scaled a fence into Black Rod's garden, brandishing a kitchen knife, shouting: "I want to see Mrs Thatcher."

Yesterday Mr Eastmond said he had gone to 10 Downing Street "to make a protest to the public and draw attention to my situation."

Mr Eastmond denied that he had taken the knife from his mother's kitchen intending to kill. "It is hard to say why I took it," he said. "I said to myself: 'I am not a violent person, I do not think I could stab myself or anyone.'"

He said that when he arrived at Downing Street, he was trying to think what to do. "Then I walked to Westminster, still with no clear idea of what I might be doing," he said.

Mr Eastmond said that he returned to Downing Street and when a policeman told him Mrs Thatcher would be going to the Commons soon, he decided to make his protest when she came out.

But when he saw a cordon of cars he thought he was too late. "Then I thought I could break into the Palace of Westminster and do some protest inside and try to get some attention to myself."

The case continues today.



Miss Philpot, aged 91, in her bedroom, which she calls "the North Pole".

## Victims of the freeze

By Amanda Haigh

The Arctic weather means a constant red alert to social workers in Bexhill-on-Sea, which has the highest proportion of old people in Western Europe.

In the Sussex town, where more than 60 per cent of the population are over retirement age, the danger of deaths from hypothermia in present conditions is acute. The local general hospital, St Helen's in Hastings, is dealing with four cases a week.

Local policy has been to keep the elderly out of care institutions and in their own homes by an intensive network of daily home help, who will do everything, including shopping, cooking, cleaning and washing, bathing, emptying commodes and administering medicine.

One thing they find they often cannot do even in a comparatively affluent retirement area like Bexhill is to persuade the old people to heat their homes.

This week a home help discovered Audrey, an elderly spinster of comfortable means, collapsed across her bed in an unheated house, her limbs blue with cold, and likely to have died within hours. Another pensioner was found wrapped in an eiderdown in front of just one bar of an electric fire.

Miss Jo Ockenden, aged 76, who recently had three operations, was found in a room with both legs, leaving her gas oven on all day with the door open to try to heat her large flat. She manoeuvres her wheelchair alongside the gas fire to heat the room.

"Friends tell me I shall set myself alight one day," she says cheerfully. "My one worry is heating. It is going to cost a fortune this year."

Other pensioners who are not on supplementary benefit and do not qualify for heating grants are afraid to heat their homes. "They are a few bills in and turn the fires off. Often they turn the heating off when the home help has gone," Mrs Mary Pearson, a home help coordinator, said.

Miss Eleanor Philpot, aged 91, who lives alone in an upstairs flat, calls her unheated bedroom "the North Pole". At bedtime she relies on a hot-water bottle and warmth from the sitting room. "The fire costs so much," said Miss Philpot, who saves all year to spend Christmas and Easter in a hotel down the road.

Mr Alfred Nudds, aged 87, a bachelor, who is blind and almost deaf, is surviving the freezing temperatures in a £13 wooden hut built by his son on the edge of Bexhill's Broad, Norfolk, without electricity or running water (our Norfolk Correspondent writes).

## Coroner urges doctors to act

From David Hewson, Norwich

Mr Prior said that he had ordered them out of the house. Mr John Drummond, the social worker, said: "She became very irate and said 'I am not worried about dying. I would rather die in my own bed'". She died on Boxing Day.

A verdict of misadventure was returned.

# Threat of censure over GLC fares vote

By David Walker

Some of the moderate and right-wing Labour members of the Greater London Council will vote on Tuesday, January 13, against the council's decision to support a public transport fare increase, despite a public promise by Mr Kenneth Livingstone, the council leader, that there would be no such vote.

The front page of the influential left-wing monthly London Labour Briefing, when it is published tomorrow, will list all GLC members and how they voted at the private group meeting of Labour councillors on Monday.

An editorial article notes that those voting for the fare increase were obeying a Tory judges' and denying a strong recommendation from the executive committee of the London regional Labour Party urging councillors to make a stand on the fare issue above all other considerations.

Recent meetings of Labour councillors at County Hall have been amicable, but members of Mr Livingstone's inner cabinet have said in private that the notion of a "fare" vote is something for constituency parties to consider.

At Tuesday's eight-hour council meeting Mr Livingstone said: "I urge my colleagues not to make this a divisive issue." Because voting against the fare increase could leave councillors liable to charges of penitence and desertion from public office, it was agreed informally that votes would not be considered a test of loyalty to the Labour manifesto.

However, members of the Briefing committee are likely to argue in their various columns that all Labour councillors should be prepared to be overcharged and sued in pursuit of their socialist policies.

## Cuckold by pony costs £140,000

By On Sports Staff

When a little grey Connemara pony stepped in to save a mare from two racing men, instead of the successful stallion, the result was a loss of more than £140,000 in compensation.

The pony, standing 12 hands, was used as a "mule" for mares in season at the Salsburgh Stud, near Kesh, Co. Fermanagh, owned by Mr E. McGee, Moore, Offaly.

The mix-up occurred according to Mr Norman Buxton, stud groom at the time, when the stallion, because the pony was allowed to run unsupervised with the mare.

After the findings, County Mayo's racing board paid £140,000 in compensation. £10,000 return of fee, a free nomination to Tap On Wood (now raised to £12,500) and £50,000.

A similar amount of compensation was also paid to Quay Line's owners, the Barry family of Belfast.

## Ministerial onslaught on Civil Service managers

By a Staff Reporter

Lady Young, Chancellor of the Duchy of Lancaster, yesterday bluntly attacked unprofessional management in the Civil Service and promised radical changes this year aimed at securing greater efficiency and value for money.

In the first important ministerial speech on Civil Service matters since the abolition of the Civil Service Commission, she said that the pursuit of economies in Whitehall did not spring just from present political and economic circumstances. "This year it could be carried through into a lasting philosophy."

Addressing under-secretaries at the Civil Service College, in Sunningdale, Berkshire, Lady Young said that "attitudes in the Civil Service towards management will need to be changed in some cases quite radically. I still meet the attitude that jobs in the policy areas of departments are superior to those in line management."

"Clearly we need to change the culture quite dramatically if we are to secure acceptance throughout the Civil Service that a career spent largely in management jobs can be as rewarding as one spent in the policy area."

The Minister said that to achieve this, the annual staff reporting system and promotion recommendations would need to give more emphasis to management performance. She also promised to increase salaries for senior civil servants to bring them more in line with the private sector.

It will mean that the Treasury and the new Management and Personnel Office will need to exercise their monitoring to the absolute minimum, to avoid fussy instructions and regulations.

# Science report Classical physics makes a comeback

By the Staff of "Nature"

The era of classical physics, the spirit of Sir Isaac Newton, James Clerk Maxwell and Lord Kelvin, among others, is generally thought to have come to an abrupt end in 1905, when Albert Einstein published his revolutionary theory of relativity. At the very least, this period is extended to the mid-1920s, when quantum mechanics (which describes elementary particles as a kind of statistical combination of particle and wave) was established.

But now Professor W. Pauli, a Swiss physicist at the University of Zurich, has extended the classical era and upsets the historical apple cart.

Professor Pauli has given a beautifully simple, classical proof of an important phenomenon which was thought to be a purely quantum-mechanical effect. The result is that the phenomenon can now be sought in stars, in space, and even in the fusion of matter.

The phenomenon is the "Meissner effect", which controls the relationship between magnetic fields and superconductors. Superconductors are materials (usually metals) which have a profound effect on electromagnetic waves and on the fusion of matter.

The Meissner effect excludes all magnetic fields from a superconducting region—except for occasional thin tubes of field that can penetrate the superconductor like a needle through wood. Inside each tube the superconductor reverts to a normal, resistive state. Outside the tube the magnetic field is zero.

Professor Pauli has now shown that this phenomenon can occur classically in any material that has "high enough conductivity" even if it is not a superconductor. The right conditions can occur in plasmas, high temperature gases, in which electrons have been stripped from atoms, and in the plasma state (stars are almost entirely plasma, for example).

As it happens, most matter in the Universe is in the plasma state (stars are almost entirely plasma, for example). The phenomenon, if it occurs in plasmas, is of great importance for the control of plasmas, and the most advanced devices achieve this control with magnetic fields. The Meissner effect, in fact, is conceivable that that control will prove easier.

Source: "Physical Review Letters" (vol. 38, 1982). C. Nature-News Service, 1982.

Overseas selling prices: Australia \$12.00, Canada \$12.00, Hong Kong \$12.00, India \$12.00, Japan \$12.00, New Zealand \$12.00, Singapore \$12.00, South Africa \$12.00, Sweden \$12.00, Switzerland \$12.00, Taiwan \$12.00, Thailand \$12.00, West Germany \$12.00, Yugoslavia \$12.00.

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# Acclaim driver wins top award for outstanding economy drive

In December, Mr Lawrence, freelance journalist, won the Guild of Motoring Writers' highly coveted Tino Makinen Award, given for an outstanding performance in rallying.

Mr Lawrence, an expert in economy driving techniques, was given the award for his victory when he partnered the new Triumph Acclaim in Britain's premier economy run — The Hants and Berks Economy Run.

## CASH DELAY 'AFFECTS CHILDREN'

By Nicholas Timmins

The National Society for the Prevention of Cruelty to Children, which is in a serious financial crisis, said last night that it was disappointed that the Government has still to decide whether to give it financial support.

After meeting Lord Elton, Under-Secretary of State for the Department of Health and Social Security, society officials said that he had asked for more time to consider the matter.

The Government had, however, known of the society's financial position since last July, the society said. In 1980 the society had a deficit of £828,000. Lord Elton, who is said to have listened sympathetically to the society's case, is to visit the society's office in Hastings.

Dr Alan Gilman, the society's director, said: "We hope it will convince him of our urgent financial needs. If it does not it will be extremely bad news for many children."

## Plea to stop power disconnections

By Pat Healy, Social Services Correspondent

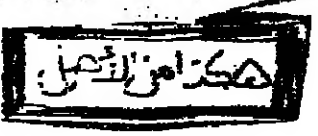
Thatcher pointed out that the fuel industries had sponsored an independent review of the code of practice designed to limit disconnections in cases of hardship. That had found that most of the people disconnected could not afford to pay their fuel bills. More than nine out of ten were employed to be in hardship, and three fifths were living on state benefits.

In a normal winter 48,000 more people aged over 65 died than in the summer; the campaign added, and deaths of babies aged under 12 months rose by two fifths. In the present severe cold, disconnecting electricity supplies was adding to the difficulties of people at risk.

The campaign said that all electricity boards, except those in South Wales, were continuing to disconnect supplies where bills were unpaid, despite the extreme cold and the risk to life.

At present more than 500 households were having their electricity supply ended each day, and a quarter of the households without electricity had been cut off for at least a month.

The letter to Mrs Margaret





## Alliance in harmony for local election seats

By Ian Bradley

The first joint list of SDP/Liberal candidates who will carry the alliance banner into the London borough elections in May are to be announced today.

The 50 seats on Hammersmith and Fulham Council will be contested by 26 Social Democrats and 24 Liberals. It will be the first time for more than fifty years that there has been a three-cornered fight in all the seats in the borough.

A survey carried out by *The Times* in the last few days shows that, in contrast to the difficulties over sharing out parliamentary seats, negotiations between the two parties in the alliance on this summer's local government elections are generally going well.

Agreements have been reached on the division of seats in about 85 per cent of the six metropolitan and 103 non-metropolitan district councils, where there will be elections in May.

Of the 32 London boroughs, there are firm agreements between the Liberals and SDP in 15, and negotiations are nearly complete in eight.

There are only three areas of conflict in the capital: Richmond, where the Liberals believe they can win nearly every seat and are reluctant to concede more than a few to the SDP; Hackney, where negotiations go off to a sticky start and there is argument over who should fight in Shoreditch; and Harrow, where there is a serious possibility that there will not be any agreement.

The SDP has high hopes of retaining its control of Islington. The alliance is also looking for victory in Lambeth, where there will be 43 SDP and 21 Liberal candidates, Camden, Hammersmith and Fulham, and Sutton.

In most places seats have been divided between the two parties on a roughly equal basis. In Manchester, where the whole metropolitan district council comes up for reelection in May, the share is exactly half.

The Birmingham Metropolitan District Council election will be contested by 59 Liberals and 58 Social Democrats. In Sheffield, where only a third of the council comes up for reelection, the division will be 15 Liberals and 14 SDP.

The Liberals have achieved an ascendancy in some of their traditionally strong areas. In the Liverpool Metropolitan Council election there will be 27 Liberal candidates and only six Social Democrats. However, that is balanced by a large number of SDP candidates for most of the district council elections in Tyne and Wear.

**Surrey agreement**  
The two parties also announced yesterday that they have reached agreement on the sharing of parliamentary seats in Surrey.

The SDP will fight four (Chertsey and Walton, Guildford, Reigate, and Spelthorne) and the Liberals seven (Dorking, Epsom and Ewell, Esher, Farnham, Surrey East, Surrey North West, and Woking). All 11 seats in the county are at present held by Conservatives.

Although the Liberals have gained a numerical superiority, it is at the expense of giving up to the SDP the seat they are most likely to win in the county, Chertsey, and Walton is the twenty-ninth Liberal seat in Britain with prime winning prospects on the basis of the 1979 general election figures.

There are only four areas among the metropolitan district councils where negotiations are proving difficult. They are in Newcastle, Stockport, North-west Leeds and Kirkcaldy (West Yorkshire). Significantly, in all those areas there are also serious disagreements about parliamentary seats, and in three of them there are sitting SDP or Liberal MPs.

Among the non-metropolitan districts, the only difficult areas known to the Association of Liberal Councilors are Wyre Forest (Kidderminster) and Cambridge.

Mr Ian Wright, southern region organizer for the SDP says: "I have yet to receive a phone call from any local party saying that they are likely to put up candidates against the Liberals."

Both party organizations are impressed at how well the local election negotiations have gone. Mr Wright puts it down partly to the pressure of time imposed by the May deadline, which has concentrated minds in a way that has not happened at the much more delicate parliamentary negotiations.

Mr Tony Greaves, secretary of the Association of Liberal Councilors, feels that the success of the local government negotiations is due to the fact that they were left to local people, with a minimum of interference from on high.

"Where there have been difficulties, it has nearly always been because the central party office or an MP has intervened," he says. "I feel that is a lesson that the parliamentary negotiations should learn."

Mr Greaves says that in most places the SDP have been happy to let Liberals fight those wards in which they have built up a campaigning strength over a long period.



A touch of spring: Mrs Juliet May and Miss Jill Diamond of St Mary's, Isles of Scilly, with armfuls of flowers destined to add a splash of colour to snow-white mainland Britain.

## Oil bore exploratory only, Shell claims

From Hugh Noyes, Lyndhurst

Fears that successful oil exploration in the New Forest, Hampshire, might lead to a rush of drilling and production applications in this environmentally sensitive conservation area brought vigorous opposition from both national amenity groups and local inhabitants at the public inquiry in Lyndhurst yesterday.

There were suspicions that other oil interests, including British Petroleum, were waiting on the sidelines to see the results of the Shell application to drill an exploratory bore hole at the Denny Inclosure, in the New Forest, at a cost of about £1m.

Denny Inclosure is an area of the forest fenced off to prevent grazing by ponies, deer and cattle so as to allow the planting of young oaks and conifers. Shell UK suspect that a maximum of about 50 million barrels of oil lies in what is called geologically the Lyndhurst structure.

Dr Philip Nelson, head of Shell's Land and Western Off-Shore Exploration and Production, estimated that about 20-40 per cent of that oil is recoverable.

Dr Timothy Brennan, Shell's director of explorations, under cross-examination gave an assurance that there was no present proposal to go farther than explorations.

The bore hole would be capped and sealed after the assessment of the potential irrespective of what was found. The Denny Inclosure would then be restored to its natural and unspoiled state.

Whatever Shell's immediate intentions, there was no assurance to allay the fears of conservationists that if oil was discovered the company would not return at a later stage to apply for production licences.

Dr Brennan agreed that there were three other areas in the New Forest in which the company is interested for exploration purposes, but he declined to disclose their whereabouts.

Pressed by Mr A. F. Holford-Walker, national secretary of the Council for the Protection of Rural England, to say why Shell was prepared to spend £1m on an exploratory bore hole when they were suggesting that production might never be proceeded with, Dr Brennan said that the risk of losing exploration money was an everyday matter for the company.

Shell admitted that whatever the result of the exploration, the Lyndhurst structure was unlikely to have production figures more than one sixth of the Wytch Farm on-shore field, in Dorset.

## Dealers to surrender auction evidence

By Frances Gibb

The Society of London Art Dealers has capitulated to the Office of Fair Trading and agreed to hand over the body of its evidence on the buyer's premium charged by auctioneers.

In a confidential newsletter to members Mr John Baskett, the society chairman, says that the public interest must be taken into account, and that had influenced the Society's decision.

The Office of Fair Trading will now be able to proceed with its investigation into whether Sotheby's and Christie's colluded over the introduction of the buyer's premium in 1975 and whether they were in breach of fair trading practices.

At the same time the society's executive committee says it is to consider asking Parliament to outlaw the premium, which is charged in addition to the hammer price.

In November both the society and the British Antique Dealers' Association refused a request from Mr Gordon Borrie, Director General of Fair Trading, to hand over the evidence they had assembled to fight Christie's and Sotheby's in the High Court.

The dealers pointed out then that their long-running battle with the auctioneers had been settled out of court.

## NEWS IN SUMMARY

### Anger over lecturer's £110 bill

Oxfordshire County Council is being asked to explain why it paid £110 for expenses to a lecturer at a two-day public speaking seminar for 12 staff (Our Oxford Correspondent writes).

The firm of management and training consultants who sent the lecturer were paid £500 for the two days and the lecturer received £110 for travelling expenses and an overnight stay in Oxford.

As single rooms at the city's best hotel cost £27.50 a night, including VAT, service and breakfast, councillors want to know why the expenses came to £110.

Mr John Power, a Labour county councillor, said: "At a time of public spending cuts I think it is wrong that the council should be paying for this type of exercise. We must have a full explanation and breakdown of costs."

### Bomb inquest adjourned

An inquest into the death of Amir Anani, aged 19, a student, and Hassan Taber, aged 24, a labourer, in a car bomb explosion in Connaught Square, Paddington, on December 13, was further adjourned until today at Westminster's Coroner's Court yesterday.

Dr Paul Knapman, the Coroner, said that the inquest would be adjourned again today for technical reasons.

### CB woman dies in road crash

What is believed to be the first fatal road accident involving citizens' band radio was disclosed yesterday by Derbyshire police.

A young mother drove out of a lane on to a main road while transmitting and was killed by a lorry at Spinkhill, near Chesterfield.

### £142,000 drugs found on beaches

Drugs with a black market value of more than £142,000 have been washed up on Norfolk and Suffolk beaches, a customs spokesman said yesterday. Three heroin bags containing a total of 100lb of cannabis resin, have been washed up at Great Yarmouth. A fourth package, found at the high water mark near Lowestoft, contained 41lb of cannabis.

### Petrol find at castle

Three bottles containing petrol and Scottish flags have been found concealed in the ramparts of Stirling Castle by workmen carrying out repairs. Police are investigating.

## Lord George-Brown is banned

Lord George-Brown, the former Secretary of State for Foreign Affairs and Labour MP for Belper, was banned from driving for three years and fined £200 at Hammersmith Magistrates' Court, Sussex, yesterday, when he admitted driving with excess alcohol in his blood.

Lord George-Brown, aged 67, was nearly two and a half times over the legal maximum, with a blood alcohol reading of 193mg, the court was told. He had been convicted of a similar offence in September, 1973.

Mr Thomas Lavelle, for the prosecution, said two police officers saw Lord George-Brown driving an erratic course in his Singer Gazelle car at Polegate, Sussex, at 9.20 pm on September 19 last. The officers turned round and followed his car. "At one stage he came perilously close to colliding with a parked car. A little later he clipped a bank on his side of the road."

Mr Lavelle said the police decided not to stop Lord George-Brown because of the heavy rain and high winds. But he stopped shortly after Polegate after making a purchase in a shop. Mr Lavelle said, "He was quite courteous to the police and gave them no difficulty at all."

Mr Lavelle said Lord

George-Brown told the officers he had drunk a half bottle of wine about half an hour before he got into the car from London. A breath test proved positive and a blood sample when tested gave a reading of 193.

Mr Christopher Stredder, representing Lord George-Brown, said: "He wishes me to say he profusely regrets that after such a distinguished career in public service behind him he now has to plead guilty to this offence."

At the time of the recent offence both Lord George-Brown's mother and wife had suffered heart attacks and were very ill. He came down under extreme pressure to spend the weekend at his country cottage. He had drunk too much, he freely admits."

## Change to private firms to cost taxpayer £10m

By Anthony Bevins, Political Correspondent

A ministerial decision to have off the administration of road construction work to private consultants will cost the taxpayer up to £10m in the current financial year.

The hidden cost of the denationalization move, with continuing losses in future years, has been revealed in a report written by Mr Gordon Downey, the Comptroller and Auditor General. He says that responsibility for £2,000m of road contracts, organized by the Ministry of Transport, has been transferred to 15 consultant engineering firms "despite the extra costs involved."

The report, which will be considered by the Commons Committee of Public Accounts, shows that an estimated £4m will be paid out in redundancy money to about 1,700 staff, Mr Downey tells MPs. "Since many of the staff had been re-employed by consulting engineers, on similar duties and often in the same location, I asked the department what steps they had taken to reduce the incidence of redundancy payments in such cases."

## Channel Four 'boon to programmes market'

By Kenneth Gosling

Channel Four had done a valuable job in creating a more independent market in television programmes, a BBC executive said yesterday.

Mr Roger Laughton, head of the BBC's network features department, added it was a myth that the BBC was not interested in independent producers. "We are interested in anyone who comes to us with a good programme idea," he said.

Mr Laughton, whose department deals with three specialist areas, rock and pop music, film and television, was announcing programme plans for the coming year.

The success of the independent sector has already received favourable comment this week from Mr Jeremy Isaacs, chief executive of Channel Four.

He announced that the channel would easily fulfil its task of taking not less than 10 hours a week from the independent sector and said it was his judgment that they would take not 500 but 750 hours of programmes a year from that sector.

Among the BBC's plans announced yesterday are a new series of the weekly film *Screenplay*, to be shared by four presenters, Maria Aitken, Glyn Worsnip, Miles Kingston and Tina Brown, from whom, with two others who have been on the programme, a regular presenter will be chosen.

There will also be 15 programmes in which Dr Jonathan Miller will meet leading psychologists; a series of birthday tributes to people in the arts and entertainment, starting with *Golden Age*, with a special series of *Writers and Places*, starting with Jan Morris on Wales, and a series of river journeys planned.

The BBC also plans, in its sixtieth year, to mark radio's "golden age" with a special programme; and, still in nostalgic vein, it is trying an experiment a television strip cartoon based on the *Daily Mirror's* famous wartime character and movie *Buster*. "We shall run it for a week at first to see how it goes," Mr Laughton said.

Mr Stephen Disson, a Prosurv executive, explained: "He is promotable in the sense that he is a motor racer and the son of Mrs Thatcher. He is also a rather bright and aggressive person, and we like that."

On the race track he has a reputation for being a somewhat temperate driver and although he has competed in several classes his record is undistinguished. Two attempts at the Le Mans 24-Hour Race, in 1980 and 1981, both ended in crashes, though in the second his co-driver was at the wheel.

Tall, slim and good looking, bearing no obvious resemblance to either of his parents, Mark Thatcher has emerged since the marriage of the Prince of Wales as one of Britain's most eligible bachelors, with constant popular press speculation about his girl friends.

## How Mark Thatcher came out of shadows

by Peter Waymark

Mr Mark Thatcher's career has illustrated the advantages and difficulties of growing up in the shadow of a famous parent. Being the Prime Minister's son has obviously helped him in his business and motor racing activities, while putting them under great public scrutiny.

In February, 1980, the news that he had agreed to model clothes for a Japanese firm in return for motor racing sponsorship brought protests from Labour MPs in the House of Commons. At first he reacted angrily and said he might leave Britain rather than give up racing. He later announced that he had dropped plans to race in Japan and had accepted British sponsorship, after discussing the matter with his mother, who had not given him any advice.

His mishaps on the race track have given far wider coverage than they would have had he been just another enthusiastic amateur driver. He escaped unhurt when his Ford Escort crashed at Mallory Park in



Missing: Mark Thatcher and Charlotte Verney

1979 and last year was involved in a collision during practice on the German Hockenheim circuit, leading to recriminations from the other driver.

He has tended to react defensively to the media, justly granting interviews and declining to give details about his company beyond saying that it is involved in international marketing. But

he did deny that he was receiving as much as £40,000 for a series of commercials in Japanese television for Curry Sark whisky.

Business absorbs three quarters of his time, but his promotional and racing activities have caught most of the headlines. He has been in steady demand from companies wanting him to endorse their products and last

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Knight K20 Upright in Rosewood Satin finish	£1985	£1850
Knight K15 Upright in Teak	£1900	£1775
Chappell TC Upright in Mahogany Satin finish	£1965	£1795
Yamaha M5J Upright in Mahogany Polyester finish	£1580	£1499
Wurlitzer 2725 FB Upright in Fruitwood	£1295	£1199
Kemble Classic Upright in Teak finish	£1290	£1190
Challen 988 Upright in Teak finish	£1320	£1199



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## French Cabinet cuts working week and extends holidays

From Charles Hargrave, Paris, Jan 13

The Cabinet today approved decrees reducing the statutory working week by an hour to 39 hours, extending paid annual holidays from four to five weeks and exempting firms from social security contributions for further shortening the working week.

The two decrees were adopted under the framework Bill voted by the National Assembly at the end of last year which enables the Government to promulgate social reforms without recourse to parliamentary approval.

They will be followed by a whole series of others between now and the end of March concerning temporary work, the so-called "solidarity contracts" with the Government which give financial incentives to firms which take on additional labour, professional training for school leavers, the lowering of the retirement age to 60 and extended rights for joining works councils.

The Government attaches great importance to these reforms which are designed to satisfy the impatience for change of the ordinary worker in ways that nationalization, decentralization and the abolition of the death penalty adopted last year could not.

The decree procedure was adopted to avoid the delays of the normal legislative Palace, described today's decrees as "a social advance without

precedent since 1936" and the first step towards the objective of a 35-hour week in 1985.

The reduction of the working week to 39 hours would not involve loss of pay, at least for workers earning the national minimum wage. But it would give employers elasticity in order to make a better use of their plant than was possible under the 40-hour week rule of 1936.

The exemption from social security contributions would be 75 per cent for firms reducing the working week to 38 hours and 100 per cent for those reducing it to 37 hours.

The aim of the cut in the working week is to create jobs, but employers are highly sceptical.

Whatever its economic results, it shows that the Government is determined to press on with reforms at a steady pace, regardless of pressure from some ministers and employers for a pause.

The Government also has the vast ambition of reconciling landlords and tenants, who have been at war since the First World War when rents were frozen for the first time.

On the agenda of the extraordinary session of the National Assembly is a Bill which substantially extends the rights of tenants, but it has been toned down under pressure from the country's 10 million landlords.



## Indonesia recalls Ambassador to Philippines

From M. G. C. Pillai, Kuala Lumpur, Jan 13

The Indonesian Government has recalled Lieutenant-General Leo Lopolisa, its Ambassador to the Philippines, for consultations after his appointment in Jakarta.

The latest remarks came today in an interview with the Manila daily, *Bulletin*. He said only an official repudiation of the claim to Sabah could bring Malaysia-Philippines ties back to what they

were before the claim in 1962.

President Marcos told the meeting of heads of government of the Association of South-East Asian Nations (Asean) in Kuala Lumpur in 1977 that his Government would take definite steps to drop its 15-year-old claim to Sabah.

Asean officials say the strained relations between Kuala Lumpur and Manila have restrained closer links among Asean countries. This is felt most strongly in Jakarta, and some diplomats suggest that General Lopolisa's statement reflected official thinking.

## Why Boris finds his marvel kept on ice

From Michael Bayron, Moscow, Jan 13

Every winter 50,000 people in Sverdlovsk, in the Urals, fall over on icy pavements, breaking limbs and suffering concussion, cuts and bruises. And for the past 33 years a 70-year-old pensioner has been battling not the elements but Soviet bureaucracy to produce a machine he claims would reduce this toll.

Boris Syroyev took out a patent on his home-made ice-scraper in 1948. His invention, which beats as it sweeps as it cleans, consists of a mass of whirling blades that chop up ice and impacted snow but somehow manage to leave the asphalt underneath untouched.

It can be used on paths and pavements, and the head of the municipal street-cleaning service testified that it could do the work of dozens of doormen, the stoutly padded, elderly men and women who daily attack the ice with picks and scrapers. He estimated that one doorman, even working all his shift run with sweat, could clear only 150 yards of pavement an hour.

Unfortunately, Mr Syroyev's first attempt to mass-produce his technical marvel came to an abrupt end when somebody assumed the Emmet-type contraption was a piece of scrap, and carted it away. Its inventor was "disappointed," however. Syroyev had just founded a scientific research institute to produce labour-saving devices of the Urals, Siberia and the Far East. He built a new prototype and took it along.

The seven scientific inventors were not impressed. They said it did not clean pavements to the required degree of slipperiness. He made some refinements, added a blade or two allowing the machine to scrape out corners and awkward angles, and left it for testing.

This went on interminably for the next 20 years without any conclusive result. Finally, in 1977 the laboratory, which had still to invent any commercially viable device, reported that the ice-scraper could "be theory-clean pavements, but in view of its inadequacies needed additional refinements."

The Soviet bureaucracy seems to have a peculiar bias against small snow-cleaning machines. Two years ago the press recounted an equally bizarre story of a Muscovite who made a fortune whizzing about a home-made mobile snow-sweeper and doing the work of all his fellow doormen. He too was unable to get his invention into production.

At the Soviet party congress in February Mr Brezhnev lamented his country's inability to put industrial inventions into practice. And today, on Moscow's icy streets, one could only agree.

## Army chief joins coup trial panel

From Richard Wigg, Madrid, Jan 13

The army general whom the Calvo Sotelo Government put in charge of Spain's crack Brunete armoured division, stationed around Madrid after last February's coup attempt, has now been nominated a special counsellor to the Supreme Military Tribunal which will judge accused officers of that division in the forthcoming trial.

General Francisco Carbonell, formerly a co-director of the combined Spanish-United States general staff, last month ended a temporary posting in command of the 12,000 strong armoured division, created by Franco to dominate this capital.

Troop movements on Madrid from the Brunete division on February 23 provided one of the most dramatic moments of the coup attempt.

Meanwhile General Jose Joste, who commanded the Brunete division at the time of the coup, has now voluntarily moved to the reserve list after being three times passed over by the Government for promotion in recent months. He has made this public gesture arguing this was the only way left to preserve his honour after writing to King Juan Carlos to intervene.

The Government removed him from the Brunete division command but he has since been charged with military rebellion.

General Joste publicly defended his conduct last year, maintaining that when he discovered the coup attempt was underway he first played for time and then helped army headquarters to call back Brunete troops. But he admitted he was not able that night to talk to General Jose Gabeiras, the army chief.

The army's regional commander in Valladolid, north of Madrid, has publicly denied that any of his officers have been meeting extreme right-wing civilians. The denial came after press reports that Senator Francisco Laina, director of state security at the Interior Ministry, approved tapping the telephones of the Valladolid cavalry academy.

ARRIGO LEVI

## How Italy lives with terror

The kidnapping of the American Brigadier-General Dozier by the Red Brigades has brought once again to Italy a large number of American journalists interested in the "Red Brigades" crisis. This had not happened for a couple of years, which is a good sign. In the late 70s terrorism and other threats to Italian democracy had allowed many foreign journalists to enjoy long working holidays in Italy, which, while being "in agony" as they wrote, remained a very pleasant place to file copy from.

The questions asked today by the inquiring newcomers are usually the following: Has there been a recrudescence of terrorism in Italy after a period of respite? Has the counter-terrorist action by the state failed? And does terrorism remain a serious threat to Italy's political stability?

The answer to the first question can be given in statistical terms. In the first 11 months of 1981, the number of deaths attributed to terrorism was 27. This must be compared with 25 deaths in 1974 (the year of the bomb against the Italian trial), 9 in 1975, 9 in 1976, 10 in 1977, 25 in 1978 (the year of Moro's murder), 22 in 1979 and 124 in 1980 (including the more than 90 deaths caused by the bomb at Bologna railway station).

These figures tell us that terrorism is still as murderous as it has been during the past five years. Another set of figures, referring to "serious" acts, however, more encouraging. There were 474 acts of terrorism in 1974, 628 in 1975, 1,198 in 1976, 2,128 in 1977, 2,395 in 1978 (the worst year), 2,365 in 1979, 1,284 in 1980 and 791 in the first 11 months of 1981.

The number of terrorists now being held in jail (either undergoing trial or already judged by the courts) had reached, by the end of October 1981, the imposing figure of 1,486. Of these 1,109 belong to the extreme left (including 444 members of the Red Brigades) and 377 are from the extreme right.

To sum up, there has been no recrudescence of terrorism, but no respite either. There has been on the whole less terrorism in Italy in the last five years than there had been in the last 70, but of a more murderous kind. Still, the number of suspected terrorists is so high and so is the number of terrorist acts of all kinds that one can only agree with Signor Spadolini, the Prime Minister, when he says: "The war against terrorism has not been won."

Most one conclude that the counter-terrorist action by the state has failed? I think that the correct reply would be the same that could be given to the same question if it referred to Britain's anti-terrorist action in Northern Ireland (although conditions are totally different, the level of terrorism being much lower in Italy, where it has had no real consequences for everyday life). That is to say: the security forces have succeeded in containing the spread of terrorism, but they have not destroyed it.

But while terrorism has not been able to function as a detonator, provoking a wide political explosion and the destruction of Italian democracy, the detonator itself has not been eliminated and keeps detonating. Probably we fear the political consequences of terrorism less than we did three or four years ago: perhaps, because we have got used to it, or because we no longer believe that it will keep growing. The political forces themselves consider terrorism poses less of a threat to Italian democracy than it did a few years ago.

But terrorism remains one of the "four enemies" threatening Italian stability, as Signor Spadolini keeps saying (the other three being inflation, corruption and the "world situation").

Both President Pertini and Signor Spadolini keep stating that there exist undeniable links between Italian terrorism and other subversive groups operating in Western Europe, although it is not certain (and in my view still unlikely) that there exists a foreign "central" guiding Italian terrorism.

But there is continuing foreign support for Italian terrorism. Both Pertini and Spadolini have left no doubt that these foreign links are with Libya as well as with Eastern European countries, including the Soviet Union.

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# Tonight, remember The Way We Were.



Tonight at 7.30 sees the British TV Premiere of the beautiful and nostalgic motion picture, *THE WAY WE WERE*. It stars two of the biggest names in Hollywood, Barbra Streisand and Robert Redford as ill-matched lovers whose fortunes change with the passing of time.

So look at the bright side this evening.

THAMES

THE BEST VIEW IN LONDON.

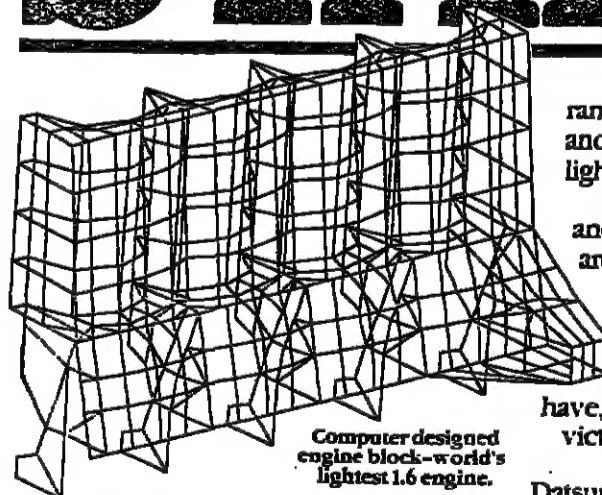


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POWER-PACKED ENGINE.  
THEN, WE BUILT A UNIQUELY ADVANCED CAR  
AROUND IT.**



1.6 SGL 5-door hatchback

# THE NEW DATSUN STANZA



Computer-designed engine block-world's lightest 1.6 engine.

Here is the all-new Datsun Stanza - a range of 3-door hatchbacks, 4-door saloon and 5-door hatchbacks, powered by one of the lightest 1600 c.c. engines in the world!

The engine is transversely mounted and drives the front wheels. So the Stanzas are roomy - very roomy. And economical - very, very economical.

Although they are new from bumper to bumper, they inherit the tough pedigree of the Datsun Violet saloons that have, for the past three years, achieved crushing victories in the East African Safari Rally.

Now the all-new Datsun Stanza is here in a 9-model

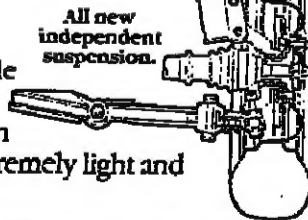
range of family and sporting cars luxuriously equipped even by Datsun standards. Some models even have power steering, alloy wheels and an automatic gearbox - and there's the option of an electric sunroof.

The prices are extremely competitive - reinforcing Datsun's reputation for giving you exceptional value for money.

## ALL-NEW ENGINE - GIVES UP TO 51.4 MPG!

For the Stanza, Datsun developed a special transverse single overhead camshaft engine.

Using a computer, we created a new cylinder block design which gives the engine a unique combination of qualities - it's extremely light and compact and yet it's also uncommonly sturdy and powerful.



All new independent suspension.

The new Stanza's engine weighs just 249 lbs - a savings of 20%, and is one of the lightest in its class in the world. This alone dramatically improves fuel economy. But we've also made other changes. For instance, we've found new ways of increasing efficiency by lengthening the piston stroke and adopting dome-shaped chambers.

The end result is a true 1.6 litre 100 mph car which can deliver as much as 51.4 mpg at 56 mph.

When you compare with other 1.6 litre cars, like the Ford Cortina, which gives you 39.8 mpg at the same speed, or even smaller engines like the Volvo 343 with 42.2 mpg, you realise the exceptional economy that Datsun have achieved with this powerful new engine.

## ALL-NEW FRONT WHEEL DRIVE - LIGHTWEIGHT AND PRECISE STEERING

The new Stanza has front wheel drive for sheer "roadability" and crisp, safe driving. Yet the lightness of the Stanza's engine means that, even in a medium-sized saloon, we can use rack and pinion steering to achieve the precise and responsive handling of a smaller car. As an indication of its manoeuvrability, the Stanza has a wall-to-wall turning radius of just 17.7 feet!

## ALL-NEW GEARBOX AND TRANSMISSION - MORE EFFICIENT

We've extracted even more economy from the Stanza by keeping the transmission lightweight and simple and fitting it in line with the engine to avoid energy waste.

On all models, 4th gear is an Economy-Overdrive gear. And on most models there's a 5-speed gearbox on which both 4th and 5th are Economy-Overdrive gears!

## ALL-NEW SUSPENSION - ULTRA SMOOTH

The Stanza's newly developed dual suspension system is fully independent.

It is designed to work in two ways. On good road surfaces, soft insulators supporting the strut rods absorb all of the fine vibrations. On bad road surfaces, another system comes into operation: severe jolts are led through a series of springs and absorbers and then finally absorbed by rubber bumper pads. The new Stanza gives the smoothest ride that Datsun's computerised technology can achieve.

## ALL-NEW SPACE UTILISATION - MEANS MORE COMFORT

By making the engine transverse and very compact, Datsun have left a vast amount of room inside the car for passengers and luggage.

There's plenty of room in the front and the back. The Stanza is longer and wider inside than either the Cortina or the new Cavalier - yet its overall dimensions are more compact!

## ALL-NEW AERODYNAMICS - FOR OUTSTANDING ECONOMY

The compact size of the Stanza's new engine allows us to keep the nose of the Stanza very low and move closer than ever towards the perfect aerodynamic shape.

The Stanza hatchbacks have an aerodynamic drag coefficient of just 0.38 - well below that of many famous sports cars. An important contribution to the class-beating 51.4 mpg at 56 mph of the Stanza 3-door!

## ALL-NEW SOUND INSULATION - SEALED AGAINST NOISE

The aerodynamics of the Stanza keep wind resistance and therefore wind noise right down.

The floor and roof both have triple-layer insulation.

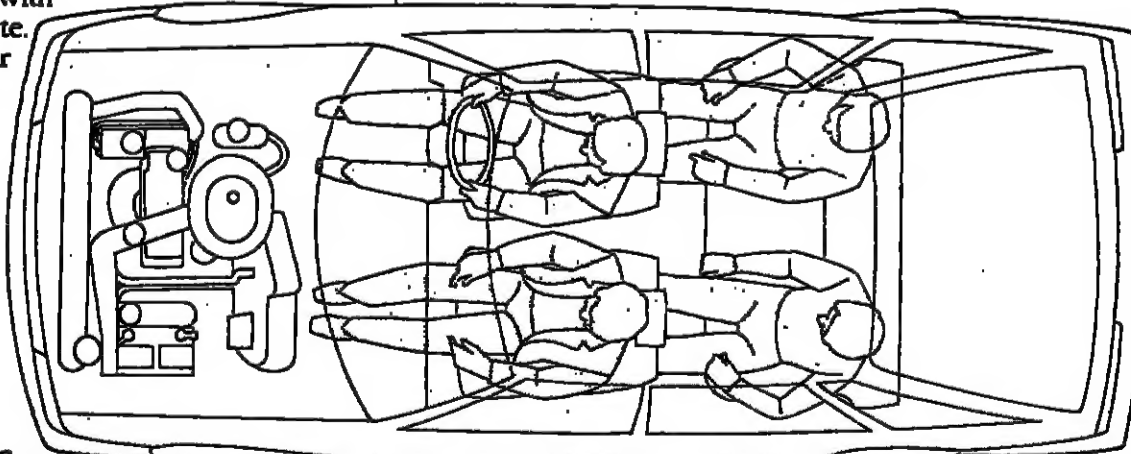
To achieve a quiet ride, Datsun have paid their usual scrupulous attention to detail. There are over 20 different sound prevention devices on the Stanza - like the flexible coupling at the exhaust or on the sound-proof casing round the heater blower.

## ALL-NEW FEATURES - AS YOU'D EXPECT FROM DATSUN

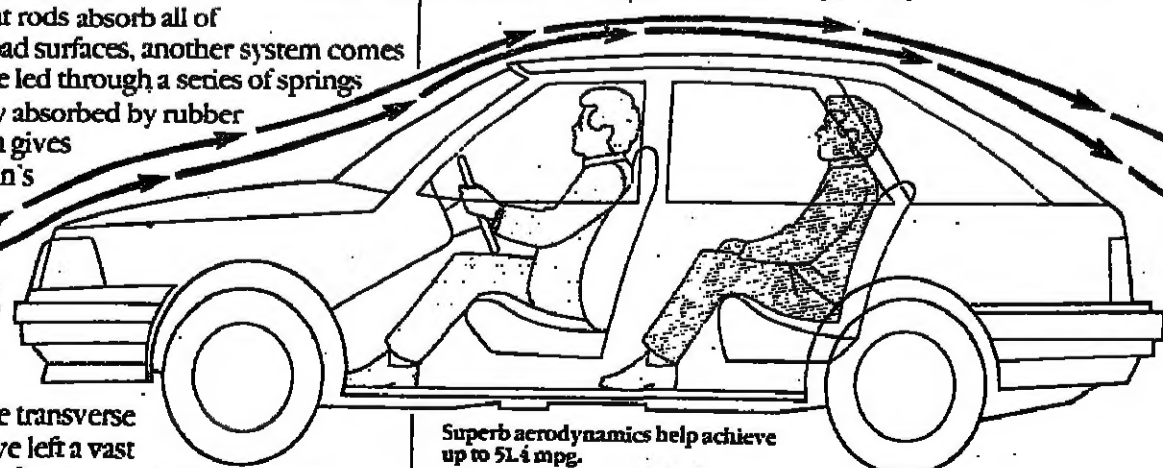
The Datsun Stanza is a luxurious family car with a long list of built-in features.

These include variable intermittent wipers with choice of 2, 4, 7 or 10 second intervals, push-button heating and ventilation, two remote control door mirrors, interior boot and fuel lid release, maintenance free battery, folding split rear seat and rear window wash/wipe on the hatchbacks, and much more including, of course, LW/MW push-button radio.

Remember too, that these are not extras - they won't cost you a penny more!



Compact transverse engine makes the Stanza outstandingly roomy.



Superb aerodynamics help achieve up to 51.4 mpg.

From £4,485 the Datsun Stanza represents real value for money - the kind of value that is only made possible by the advanced technology and resources of Nissan-Datsun, the third largest car manufacturer in the world.

The Datsun Stanza is a totally new car built to satisfy world requirements and perform reliably in all conditions anywhere in the world.

Come to your Datsun dealer and have a test drive today.

**DATSUN**  
**STANZA**  
BY NISSAN

### NEW STANZA 1.6 GL STANDARD EQUIPMENT

<input type="checkbox"/> Two remote control door mirrors	<input type="checkbox"/> Push-in button heating/ventilation controls	<input type="checkbox"/> Advanced display of warning lights
<input type="checkbox"/> 2-speed wipers with variable intermittent wipe	<input type="checkbox"/> Side window demisters	<input type="checkbox"/> Warning chime for 'lights left on'
<input type="checkbox"/> Rear window wiper/washer (hatchback)	<input type="checkbox"/> High grade cloth upholstery	<input type="checkbox"/> Tinted glass
<input type="checkbox"/> Interior boot/tailgate release	<input type="checkbox"/> Push-button LW/MW radio	<input type="checkbox"/> Adjustable front head restraints
<input type="checkbox"/> Interior fuel lid release	<input type="checkbox"/> Quartz clock	<input type="checkbox"/> Luggage area lamp
<input type="checkbox"/> Lockable illuminated glove box	<input type="checkbox"/> Passenger seat walk-in device (3-door)	<input type="checkbox"/> Maintenance free battery
		<input type="checkbox"/> Halogen headlamps

GOVERNMENT FUEL CONSUMPTION TESTS, MPG (LITRES PER 100KM) (DATSUN STANZA 1.6 GL 5 DOOR HATCHBACK CONSTANT 50MPH (80KMH) 41.1 (4.5) TOWN DRIVING CYCLE 29.1 (6.2) CONSTANT 75MPH (120KMH) 51.4 (4.4) DATSUN STANZA 1.6 GL 4 DOOR HATCHBACK CONSTANT 50MPH (80KMH) 41.1 (4.5) TOWN DRIVING CYCLE 29.1 (6.2) CONSTANT 75MPH (120KMH) 51.4 (4.4) DATSUN STANZA 1.6 GL 3 DOOR HATCHBACK CONSTANT 50MPH (80KMH) 41.1 (4.5) TOWN DRIVING CYCLE 29.1 (6.2) CONSTANT 75MPH (120KMH) 51.4 (4.4) DATSUN STANZA 1.6 GL 4 DOOR SALOON CONSTANT 50MPH (80KMH) 41.1 (4.5) TOWN DRIVING CYCLE 29.1 (6.2) CONSTANT 75MPH (120KMH) 51.4 (4.4)



# Israel rules out compromise on Palestinians

From Christopher Walker, Jerusalem, Jan 13

The Israeli Government today ruled out any compromise in its opposition to the Egyptian demand that the 100,000 Palestinian residents of East Jerusalem should be allowed to vote in the proposed autonomy council for the occupied West Bank and Gaza strip.

A senior Government official, speaking on the eve of the arrival of Mr. Alexander Haig, the American Secretary of State, said that no change could be expected in the Government's position on the issue, one of the key subjects dividing Israel and Egypt on autonomy.

Mr. Yitzhak Shamir, the Foreign Minister, rejected opposition Labour Party suggestions that the Government should make concessions to make a quick autonomy agreement. The Israelis reject the Egyptian view that the former Arab sector of Jerusalem is part of the West Bank, emphasising that in all public comments that it is the unified capital of Israel.

Israel's public rejection of concessions has deepened pessimism among Western diplomats about America's chances of breaking the deadlock in the autonomy talks. Briefing correspondents, the Israeli official acknowledged that there were essential differences with Egypt on the meaning of autonomy. These, rather than discussion of detail, would dominate Mr. Haig's hectic round of official meetings.

Pressed to outline the differences, the official said: "It is a basic difference of interpretation. Egypt sees autonomy as a step towards self-determination while we

see it for what it is — autonomy." The Israelis have emphasized from the outset of the talks that they view autonomy as covering only the 1.2 million Arabs in the West Bank and Gaza and not the land on which they live.

Israel defended its position in an official document issued last year by citing international precedents including South Tyrol, the south of Sudan, Greenland and the Faroe Islands. Today, the official denied suggestions that Israel's uncompromising position was intended to set a new pattern for the international definition of autonomy.

Militant Jewish settlers protesting against the dismantling of hot houses in the occupied Sinai soon to be handed back to Egypt today claimed victory after an eleven-hour agreement prevented a violent clash with troops.

Fifteen hot houses at the agricultural settlement of Harvut will now not be dismantled, while those already taken down will be shipped out without opposition, under the agreement with senior Army officials.

The compromise came 48 hours after extreme Jewish nationalists invaded the site and began to erect tents and occupy buildings. By this morning, several hundred protesters had gathered for what was expected to be a confrontation with troops. As militants began to leave, one leader, the Stop the Withdrawal from the Sinai Campaign said: "We consider this an accomplishment and a victory. This is the first stage in the process of stopping the withdrawal."

## China fights inflation

# Peking runs short of loose change

From David Bonavia, Nanjing, Jan 13

Most commodities are in adequate supply in this former capital of China except coins. For reasons which nobody seems able to explain, the standard aluminium coins have almost disappeared from circulation.

Whether this means some enterprising person has found the coins can be melted down and worked into products costing more than their face value is a matter of speculation. Chinese post office workers became extremely irritable when I asked them about it.

As substitutes for the coins, tiny paper notes with a face value as low as 0.3p in sterling have gone into circulation recently having previously been circulated in Tibet and in Chinese Central Asia, where the herdsmen barely participate in the cash economy.

The use of foreign currency certificates, introduced about three years ago to counter black marketing, is also in chaos. For almost anything except air tickets and luxury or imported goods, the normal Chinese currency is readily accepted and almost any shop where one pays in certificates will give change in normal currency. This has resulted in a bigger black market than before the certificates were introduced in 1979.

Nanjing has long been a noted centre of black market dealings — its population being familiar with the manipulation of prices and supplies since the time of the Nationalist Government of the late 1940s and one of the most spectacular inflations in the history of money.

After a long period during which the Communist Party and Government insisted that there was no inflation in China, the growth of the money supply has alarmed the authorities to the point where Peking has just imposed draconian price controls.

No prices of anything, anywhere, except at small rural markets, may be raised without official sanction.

This may be necessary as a result of the recent round of inflation in China but it makes nonsense of the current economic reform, in which flexible pricing according to market demand was planned as an essential element.

Peking has suffered shortages of some foodstuffs in recent months and this has led to panic buying and hoarding. The Government has now promised that food prices will not rise, and has ordered price cuts of between 10 and 20 per cent for transistor radios, black and white television sets, watches and synthetic knitted wear.

At Nanjing's biggest department store, people are jostling three-deep at the counter to inspect television sets and radios. But of course nobody is buying until the day after tomorrow when the price cuts come into effect and when there will be something like a riot.

In the street markets, controls on prices of commonly eaten vegetables have been in effect for more than six months. But such delicacies as lotus root and fruits are not controlled, since they are considered inessential.

Pork seems abundant, with working people taking home slabs which would be generous for even a European family. Pulses, sweet potatoes and other foods also seem to be in good supply. A locally made bicycle can be bought with ease but people make from Shanghai have to join a waiting list.

The bookshops have improved their stocks and foreign literature is popular. Private translations of *Death on the Nile* by Agatha Christie, *The Day of the Jackal* by Frederick Forsyth and *The Heart of Darkness* are available. There are plenty of foreign language textbooks, particularly English, and there is keen demand for a new handbook of American slang.



Tanks taking up position in front of the smashed gate of a shipyard in Gdansk, photographed by Poles on December 16 three days after martial law was imposed. The gate has been repaired since.

# Warsaw hopes for a Solidarity 'without 43,000 officials'

By David Cross

Poland's martial law authorities are increasing their efforts to justify the continuing state of emergency with a fresh attack on some of the most prominent leaders of Solidarity, the suspended independent trade union.

In a bitter attack on such workers and intellectuals as Mr. Jacek Kuron and Mr. Adam Michnik, leaders of the former KOR organization, and Mr. Jan Rulicki and Mr. Zbigniew Bujak, regional leaders of Solidarity, the armed forces newspaper *Zolnierz Wolnosci* claimed that they were nothing more than a "gang of political adventurers".

The newspaper said that at a meeting of the Solidarity leadership in Gdansk on the day before martial law was proclaimed the debate showed that what had started as an organization to help ordinary working people had changed into an opposition political party. Its aim, the paper said, was to prepare the working people, against their interests, for overthrowing the socialist system and restoring a bourgeois-capitalist state.

The newspaper said it hoped that after these experience the working people of Poland would understand that "the time will come to build a strictly trade union organization, a purely working class organization, without false advisers, without developed regional structures, without 43,000 officials and without political adventures".

In what appeared to be an attempt to meet public criticism of the martial law, Warsaw radio announced yesterday that a

new national daily newspaper was about to be published under the editorship of a former government press spokesman.

Mr. Jozef Barczak, the new editor-in-chief, is neither a hardliner nor a radical reformer in Polish terms.

Instead, he is very much a middle of the road figure with some liberal ideas and high professional standing. The new newspaper, which will be published from today under the title *Rzeczpospolita* (The Republic), is designed to respond to the demand for news about "the work of the Parliament and the Government and for a platform for dialogue between the authorities and the community".

Warsaw radio said, the official Polish news agency, reported yesterday that the swollen Vistula river was continuing to flood large areas of farmland in north and central Poland. Although the water level was beginning to drop, it had started to affect winter grain growing conditions.

This could cause further food shortages in due course. After its first official announcement, the Warsaw radio saw since martial law was proclaimed, the Polish Politburo yesterday called on all Communist Party officials to step up their efforts to help people in the flood region, where about 12,000 people are reported to have been evacuated.

At the Vatican, the Pope has criticized Poland's martial law regulations for preventing Catholics from leaving the country to visit the Holy See. Such a ban was a violation of human rights, the Pope said. The Vatican also disclosed

earlier this week that the Pope had exchanged letters with Mr. Lech Walesa, the detained leader of Solidarity, during the past month. No details of their communications have been released so far.

The 16 Western nations who have loans outstanding to Poland are meeting in Paris today and tomorrow to try to reach a joint stand on future negotiations about the \$25,500m (about £14,000m) which they are owed. In Cologne, Herr Reinhold Stoessel, president of the Deutscher Bank, said yesterday that Poland was not counting on Moscow to pay off \$350m worth of interest to the West.

Instead, the Comcon Bank in Moscow might underwrite the payment, Herr Stoessel said in a radio interview. He added that this possibility had been raised during a recent visit to Warsaw of Western bankers.

Brussels: EEC foreign ministers meeting informally in Brussels over the next two days are likely to consider an answer to General Jaruzelski's suggestion that Western countries might be asked to receive Solidarity leaders who might be expelled by his military Government. It was made during a meeting with envoys from the EEC on Monday last week.

Mr. Leo Tindemans, the Belgian Minister of External Relations, who is president of the EEC Council of Ministers, has since canvassed all other members about an appropriate reply, but there has been no agreement on a final text. He will be seeking this in the course of the meeting.

# President moves to plug the leaks

From Nicholas Ashford, Washington, Jan 13

President Reagan believes his Administration is the least leakiest in history. Since his inauguration he has regularly complained to his senior officials about the way unauthorized and sensitive material has found its way into the newspapers. But apparently to no avail.

During the past week alone *The Washington Post* has carried three separate stories dealing with defence spending, the sale of aircraft to Taiwan, and urban enterprise zones — which were supposed to have been kept secret.

Although some officials and many journalists believe this Administration to be less prone to leaks than previous ones, an enraged President has now ordered a crackdown, vowing to use "all legal methods" to investigate government officials who may have disclosed classified information to the media. Last night, the President claimed that unauthorized disclosures of classified information had become a "problem of major proportions" with the United States Government. He issued a statement setting out ground rules to end what he described as "a virtual hemorrhage of leaks".

The directive, based on recommendations by Mr. William Clark, the new national security adviser, applies to the National Security Council staff, employees of the state and defence departments and the intelligence community.

In future, government employees who plan to discuss classified information with reporters must obtain prior permission. After the interview, they must issue a report recording the subjects discussed and all information provided to the media representatives.

The directive also calls for a reduction in the number of officials with access to material involving National Security Council matters. Their number will be "kept to a minimum essential to the orderly conduct of government business". The President's statement did not say what disciplinary actions would be taken against offenders, but an official said details would be worked out later.

Clark has demanded the administration is to prevent leaks has been illustrated by the fact that Mr. Frank Carlucci, the Deputy Defence Secretary, took a lie detector test as part of a Pentagon investigation into disclosures who told *The Washington Post* last week about a secret report dealing with future defence spending. This report said defence costs could be as much as \$750,000m more than presently estimated.

A Pentagon spokesman said today that other senior Pentagon officials were also undergoing lie detector tests. About 25 people took part in the meeting at which the defence costs were discussed. According to Mr. David Gergen, the White House communications director, there have been two main kinds of leaks. "Some leaks have resulted in the compromise of sensitive intelligence sources and methods, in some cases endangering lives," he said. "Second, in several important cases leaks to the press have preceded presidential discussions of highly sensitive foreign policy decisions."

The leak which appears to have been responsible for provoking the President's ire this time and provoked last night's directive was a report that the Administration had decided not to go ahead with the sale of advanced aircraft to Taiwan. This report appeared before Taiwan and China had been officially advised on the American decision.

## Diplomat killed

Seoul. The bullet-riddled body of an Algerian diplomat was found in south Beirut. Security forces said that he was Mr. Rabeh Kharwa, a counsellor, in his fifties.

# Man boasted of killing Briton, prosecution says

From Our Correspondent, Baltimore, Jan 13

An 18-year-old man charged with murdering a British antique dealer here last summer bragged to his friends about the crime, and only later tried to cover it up, the prosecution told a jury here yesterday.

"He repeated again and again to anybody that would listen how he had attacked and killed the Englishman in our city," Mr. Stephen Tully, the prosecutor, said on the first day of trial of three men accused of killing Mr. Philip A. Rouse of Somerset.

Mr. Rouse was shot as he chased a thief who had grabbed a shoulder bag from his 21-year-old girl friend as the couple and another English companion walked in a stylish Baltimore neighbourhood early on August 22 last year.

Several days after the widely publicised killing, the defendant sold the gun, a .32 long barrelled revolver to an acquaintance in order to get rid of the evidence, Mr. Tully told the jury.

The prosecution claim contradicts a statement that

## NEWS IN SUMMARY

# Yugoslavia premier is a woman

Belgrade. — Yugoslavia's collective presidency has nominated Ms Milka Planinc, the Croatian Communist Party chief, to serve as the new premier, the first woman to head a Yugoslav government.

The official news agency Tanjug said that her candidacy was supported by the ruling Communist Party praesidium, making her appointment a foregone conclusion. There was no word on when she will take over from Premier Vesselin Djurajevic. Other Croat organisations at various levels, all led by the communists, will discuss Ms Planinc's candidacy.

# Obote pledge on property

Kampala. — President Obote says that the Uganda Government is committed to returning property confiscated in former President Idi Amin's "economic war" to its original owners — most of them Asians now living in Britain, India, Canada and other countries.

He told a group of directors of East African Breweries, the Nairobi company which lost its controlling shareholding in Uganda Breweries on Amin's orders in 1972, that he would welcome their return to rebuild the Ugandan beer industry.

# Seoul publisher faces death

Seoul. — The death sentence has been handed by the prosecution for Mr. Lee Tae Bol, a South Korean publisher, who is charged with violating the national security law.

Mr. Lee, aged 30, is accused of printing and distributing banned foreign books, mostly by Marxist authors, of maintaining the organization of a national democratic students' league and a national democratic labour union, and of attempting to overthrow the Government of disseminating the ideals of communism throughout the country. He denies the charges. Twenty-five other people appeared in court with him.

# Soviet dissident 'in danger'

Moscow. — Dr. Andrei Sakharov, the Soviet human rights leader, has given a warning that the health of the imprisoned dissident Dr. Yuri Orlov is in danger and has appealed for his release. In an open letter to the European security review conference in Madrid, due to reconvene on February 9, Dr. Sakharov said that Dr. Orlov, aged 57, had been in a labour camp prison for months and "his health and perhaps his life, are in danger".

# Wedding bliss discouraged

Peking. — Peking restaurants are encouraging couples to cancel elaborate wedding banquets at the Chinese New Year this month in a drive against extravagance, according to the *People's Daily* newspaper.

National holidays are a favourite time for weddings and many couples have elaborate banquets despite endless official calls for frugality.

# Christiaan Barnard divorced again

Cape Town. — Mrs Barbara Barnard, the wife of the heart transplant pioneer, Dr. Christiaan Barnard, has been granted a divorce in the Cape Town Supreme Court.

The couple, who have two sons, were married in 1970 soon after Dr. Barnard's first marriage ended in divorce.

# British aid sought on yellow rain

From Our Own Correspondent, Washington, Jan 13

The United States has asked Britain to assist in the collection and analysis of evidence that lethal chemical weapons are being used in South-East Asia and Afghanistan.

Mr. Richard Burt, director of the State Department's bureau of politico-military affairs, said that British scientists and aid officials were working in Thailand and other parts of South-East Asia to which refugees from Laos and Cambodia had fled. It was possible they would come across evidence of the use of these chemicals, known as yellow rain. He added that British research establishments could also assist in analysing some of the samples of the highly poisonous substances which have already been discovered on trees and rocks in the region.

America has accused Vietnam of using chemical agents in remote parts of Laos and Cambodia. It also maintains that there is compelling evidence that these chemical weapons are being manufactured and supplied by the Soviet Union. Evidence already collected by the United States has been supplied to a four-man panel of experts at the United Nations which is investigating charges that Soviet-made chemical weapons have been used in South-East Asia and Afghanistan.

The United States has approached Britain, and is also talking informally to its other allies, because it wishes to gain broader international support for its campaign to prevent the use of yellow rain and other chemical weapons. American officials have been dismayed that the evidence it has produced so far has been greeted with considerable scepticism by the international community.

Last September, Mr. Alexander Haig announced during a visit to West Germany that America had physical evidence that poisonous chemicals were being used in South-East Asia in violation of the 1972 biological weapons convention which forbids the production, stockpiling or transfer of toxic weapons.

# Swapo says Walvis Bay is part of Namibia

From Stephen Taylor, Salisbury, Jan 13

Walvis Bay was an integral part of Namibia (South-West Africa) and the South African People's Organisation would fight for it in the same way that it is fighting for the rest of the disputed territory, Mr. Sam Nujoma, Swapo's president, said today.

Speaking at an airport press conference at the end of a one-day visit during which he had talks with Mr. Robert Mugabe, the Zimbabwe Prime Minister, Mr. Nujoma dismissed the history which has left the strategic Atlantic port a South African enclave. "We are fighting to liberate each and every inch of Namibia including Walvis Bay," he said.

He said Swapo had still not formulated its response to the latest initiative by the western "contact group" adding, "We are consulting the frontline states, Nigeria and the president of the Organization of African Unity."

The visit was clearly aimed at bolstering support among frontline states for Swapo's negotiating position and Mr. Nujoma left declaring that he was "very happy with fruitful discussions".

Talks aimed at reaching an agreement on the first phase

# Canberra job for judge not the Prince

By Our Foreign Staff

In a constitutional crisis, like that of 1975 which deeply divided Australia and strengthened republican sentiment.

Sir Zelman Cowen, is to be the new Provost of Oriel College, Oxford. He is expected in Oxford in September.

Sir Zelman a-barrister and QC, taught law at the college from 1947 to 1950. The retiring Governor-General has been Chancellor of Brisbane University.

The vacancy was created by the resignation of Lord Swann, the former chairman of the BBC, last July after only a year in office. The appointment was made by the Lord Chancellor on behalf of the Queen, the College Visitor, because Oriel did not find someone within the 90 days as required by college statute.

# OVERSEAS DRIVE BY CANADA

From Our Correspondent, Ottawa, Jan 13

Canada's External Affairs Department has been radically reorganised in a move intended to give greater priority to trade in the development of Canadian foreign relations.

Under a plan announced by Mr. Pierre Trudeau, the Prime Minister, yesterday, external affairs will take over the foreign trade function exercised until now by the Department of Industry, Trade and Commerce. This in turn will take over responsibility for regional economic development programmes in Canada, while retaining its present mandate for industry, tourism and small business.

The Prime Minister said that the reorganization of external affairs signalled a national effort to pursue aggressively international export markets for Canadian goods.

The new External Affairs Department will have three ministers instead of one. Mr. Mark MacGuigan, the present Secretary of State for External Affairs, will be supported by a minister for external trade, and a minister for external relations.

# ACADEMIC BOOK SALE

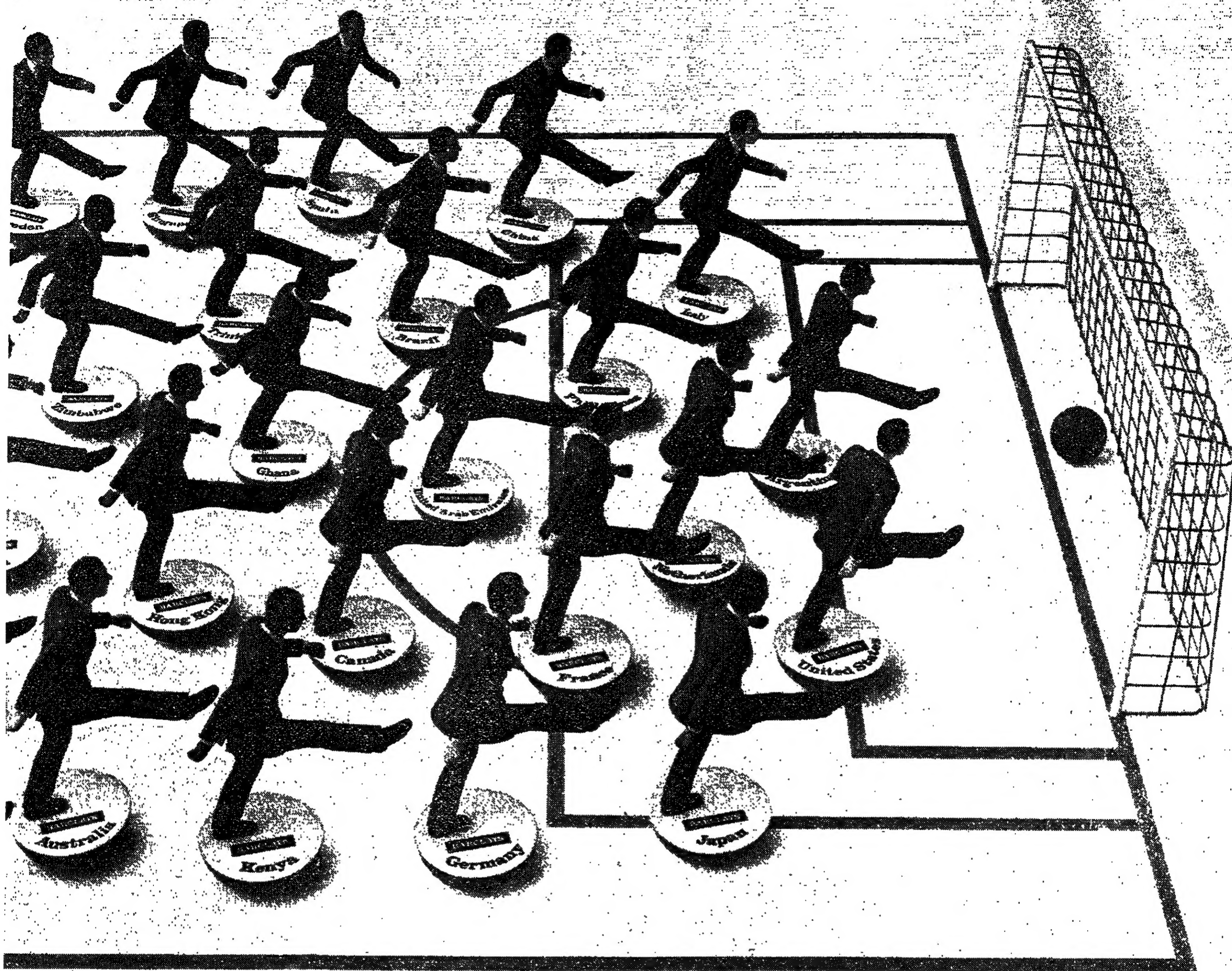
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## THE ARTS

## Cinema

## Indigenous virtue

With just under seven weeks to run in BBC2's season of Australian films, David Robinson makes his selection from the "cinema miracle"

If proof were needed that the Australian cinema miracle has persisted, in defiance of Casparys at home and abroad, it is BBC 2's current season of Australian films. Like most miracles, this one was rather less miracle than happy coincidence of will and organization. In the early Seventies a couple of loud forces, the *Adventures of Barry McKenzie* and *Alvin Purple*, striding well below belt level, demonstrated that Australian films could find an audience abroad. The establishment of the National Film Commission and subsequently state commissions showed the concern of the Government to build up a native film industry, and provided funds that went slightly further than merely priming the pumps.

In Australia, suddenly, there was Peter Weir with his still under-appreciated horror-comic *The Cars That Ate Paris* and Ken Hannam, who returned from British television to make the most majestic film of the Australian flowering, *Sunday Too Far Away* (February 21).

The new Australian cinema started with several advantages. It was not weighed down like the British cinema with extravagant habits that come with too long involvement with American production methods, or with toughly restrictive trade unions. Modesty and flexibility are strong assets of Australian cinema. So is the unashamed demonstration of a national idiom, the declaration that Australians are not Americans or British with a funny accent. Through Australian films the world has begun to discover an authentic and identifiable Australia.

lian character, sentiment, humour, language, style and strength. Australian acting has a directness of its own, the attractions of which are demonstrated, at one level, by the growing popularity of Oz TV soap operas. This is truly the projection of a nation.

The new cinema has had its difficulties, foremost and most persistent, inevitably, money. Within the past year the Government devised an enlightened tax-relief scheme to stimulate investment in Australian pictures; but were forced into a series of contortions and sidesteps when it became clear that the scheme involved the risk of pushing production into a terrible dead end of fast-buck quickies. A revised scheme paid more attention to the individual merits of projects and the degree of Australian involvement.

A continuing cultural dilemma divides those who believe that, to win an international market, Australia had to aim at some mythical concept of the international film from those who believe that the strength of Australian films is their studiously indigenous content and quality. History and box office alike support the indigenous view. The films that have achieved commercial success internationally even when they have used some foreign talent, have been as Australian as 'roos. The "international" pictures have generally sunk without trace, proving that the mid-Pacific film is the same unadorned vessel as the delusory mid-Atlantic production which has so often undone British film-makers.

The BBC selection illustrates



Susannah Fowie in "The Getting of Wisdom": Bruce Beresford rising handsomely to a challenge

based on a real case, about the anguish of a Greek immigrant whose husband abducts their child and takes it back to Greece, leaving her to discover the rough and the smooth of an alien society. It is no particular credit to BBC television that *Sunday Too Far Away* has waited seven years for this first screening. The title comes from the lament of the wife of the sheepshearer home for the weekend: "Friday too tired, Saturday too drunk, Sunday too far away." The rivalry, rough humour and hardships of the shearer's seasonal world might sound too promising a theme; but Ken Hannam brings to it the thrill of epic as well as the less bawdry of Australian humour.

A later film by Hannam in the season, the psychological mystery melodrama *Summerfield* (January 17), shows him vainly grappling with a script that stubbornly remains a contrivance. The energetic and prolific Bruce Beresford is also generally as good as his scripts. He can rise handsomely to the challenge of *Breaker Morant* or the seasonal work in the kind of sub-Hollywood manner that does not get the Australian cinema very far.

I have yet to see Tim Burstall's *The Odd Angry Shot* (January 31), about a young Australian soldier in Vietnam. For those who like many sentimentalities there is yet another showing of an established BBC favourite, Henri Safran's *Storm Boy* (January 19), which tells of the friendship of a little boy, a penguin and a young aboriginal; and there is *Blue Finn* (February 16), an attempt to recapture the quality of an adaptation of a novel by the same writer, Colin Teiler, and starring the same child, Greg Rowe, by this time slightly larger.



McGough (left), Patten: nervous tension

## Poetry

## Diving into culture

With the faintly nervous arrogance of a newly-famous Sixties pop star Brian Patten flutters through a succession of interview responses and poses. Roger McGough seems also nervous but reacts by producing a steady flow of rationalizing and genial but puzzled patter. "Of course Brian was always The Poet in those days..." The Patten head dips in modest affirmation over his tightly crossed legs. Those days were the early Sixties. Patten, a 15-year-old reporter on the *Booth Times*, met McGough, a teacher of (among others) John Comah, and they discovered a mutual interest in poetry. Patten produced a poetry magazine called *Underdog*, written mainly by himself under a variety of names, and McGough joined in.

Liverpool at the time was being sacrificed by the new pop music, a fashion that gradually accreted enough claims to seriousness to admit something called poetry. By the end of the Sixties, a Penguin anthology called *The Mersey Sound* had endorsed the aspiration. The verse owed its sociology to the American Beats and its style, according to McGough and Patten now, to the French surrealists and symbolists.

Patten left Liverpool for London before the Penguin was published. Asked why, he goes into a strange, nervous paroxysm and says he will answer later. Patten thus dived into culture in a basement in Holland Park while McGough leapt into show business with *The Scaffold* and subsequently *Grimm's Scaffold* was closer to pop than verse and any vestiges of surrealism had long since been diluted to naughtiness of the zany, madcap variety. "I enjoyed being part of the group. I enjoyed extending the possibilities of that. It was a strange mix one day we were on *Top of the Pops* and the next day it was *Kaleidoscope*", says McGough.

But just producing books had also proved a viable living for Patten, and indeed they both represent oddities in the modern world in that they can make a living out of writing verse. Both, in deference to their original inspiration that their work should

above all be accessible, also give a steady flow of readings. The show which opens at the Tricycle on Monday is a development of that.

Patten comments: "There is a difference between what we do and a straight poetry reading in which a poet shows himself off. We take notice of each other and of the audience. It's more a show than a poetry-reading. They came together as performers at the Edinburgh Festival, beginning by simply reading, subsequently working on some degree of interaction and finally aiming for a fully-fledged show. In fact the Tricycle production is not that show. The theatre just happened to be available for the two weeks but the full show — entitled *Behind the Lines* — was not ready. So effectively this one will be a transitional phase between straight readings and full performance. It will incorporate readings from their own work, some from that of other poets, and a number of sketches.

Neither sees this kind of format as any particular blueprint for the future or as any permanent development. Indeed once *Behind the Lines* is completed and performed they are more likely to slip back into straightforward readings, the audience for which has remained astonishingly consistent. "We get audiences of two or three hundred, sometimes less — poetry is never going to fill the Albert Hall — but that number keeps the atmosphere of a small hall for the readings."

They also take heart from the composition of the audience: "We still get the older people coming up and asking us to sign tattered copies of *Mersey Sound*, but there are lots of kids coming who weren't born when the first poems were written." Some of those children have also found McGough and Patten in CSE and O level examinations, an ambiguous honour denied to their musician comrades. "We haven't made it to A levels yet. We're not dead enough yet," says Patten, evoking in those few words all the reflex schoolkid anti-authoritarianism of the Sixties as if it was yesterday.

Bryan Appleyard

## Interview: Alfred Brendel

## Playing with ideas

The bizarre portrait-model of Alfred Brendel which stands on his piano, half-centour, half grand piano, surveys a studio of leering faces. There are masks from Africa, Indonesia and New Guinea, faces from Peanuts cartoon strips and an extraordinary early surrealist Viennese etching of Beethoven's head, with a couple locked in embrace in the tangle of his hair. "That must have been because Beethoven was foolish enough to say something about the entire person being both male and female", laughs Brendel, and scurries off to find the reference in a tiny old book.

Brendel's studio and his conversation reverberate with the play of ideas, the absurd, the whimsical and the macabre bouncing in and

out of the deeply serious, fusing in an instant like a metaphysical conceit. Haydn's face comes into focus: "Goethe says he had the two most important qualities of genius: naivety and irony. I think what he means by irony is a sort of detached oversight, whereas naivety is the opposite, the total involvement. But today we notice much more the adventurousness of Haydn, the mocking of rules, rather than the setting of them, because we are used to Mozart and Beethoven who came afterwards."

Haydn and his piano sonatas take up a large place in Brendel's life at the moment. He spent his last sabbatical studying what he considers to be an unjustly neglected corner of the repertoire, and intends to continue playing and recording the sonatas over the next few years. In his Festival Hall recital on Sunday he will play the late D major Sonata. "The second movement is quite crazy, one of those mad-minutes, anti-scherzos where all the accents are wrong. I want to make the public listen to Haydn and show them that music can be fun. Particularly when I play the C major Sonata, too, I like to sit there like one of those little men in a Charles Addams cartoon, to show them something quite extraordinary is going to happen."

He will play the D major Sonata on a modern concert grand; but how does he rate performances of Haydn on



Brendel: Liszt-obsessed

original keyboard. Instruments like the fortepiano? "I'm much less interested in what Haydn's or Mozart's piano was than in what Liszt's piano could do than what their orchestral and chamber music sounds like. Their keyboard music is most often a reduction of ideas for all possible media. Take the A minor Mozart Sonata, for instance, which I shall play after the Haydn Sonata. I have made up my mind now, as I wanted to do when I was 20; I'm playing it as an orchestral piece, not as something which has to be scaled down to a Mozart piano. That would not, in my opinion, do justice to what the piece wants to say. It is so big in scale, so grandiose and orchestral in the first movement, that we must take advantage of the orchestral colours of a modern concert grand."

Last year, Brendel released an important new record of the late piano works of Liszt, (Philips 9500 775), a composer with whom he has been obsessed for many years. He was playing and recording the late works 25 years ago when nobody else was taking him; in 1978 he received the Liszt Society's Grand Prix du Disque, but only now, he feels, are we beginning to listen to them properly, not as dazzling technical fireworks, but merely as forerunners of twentieth-century music, but to feel their true heart. For Liszt is another face, his music another mask, that still exercises his fascination over Brendel. He has, indeed, compared these late works with the discovery of the primitive in European painters like Gauguin at the turn of the century. The "brevity and monumentality" the "monotony and refinement" that he sees and repeats so tellingly in the dark colours, the bare unison writing of *Unstern*, its growing obsessiveness, the almost dizzy claustrophobia of the *Cadidas macabre*, are just facets of that "bitterness of heart" of the decline of tonality and human personality in late Liszt which intrigues Brendel.

It is a subject about which Brendel has written fascinatingly and illuminatingly in an essay which accompanies the record. For Brendel, unlike many performing artists, writing is a constant and necessarily integral part of his art, shaping and articulating verbally the ideas he is working out through his playing. "I'm interested in thinking as clearly as possible. In music, thinking and feeling are necessarily connected: the repulse and the mammal contribute emotion, but the sense of order and necessity is generated by ratio. Reason is a clarifying force, a filter for the emotions. And I'm intrigued to find out how clearly one can write about music without over-simplifying, by being specific, but not esoteric."

Hilary Finch

## Television

## Aspiring to saintliness

Dora Greenfield has erred, diminished herself permanently in her husband's eyes by her escapades but not to the extent where he can forbear to take her to bed. Their reunion takes place in a lay Anglican community where the light of righteousness shines but the shadows hide the conflicts between spiritual aspiration and base temptations. It is Iris Murdoch country, the setting for *The Bell*, dramatised in four parts on BBC2 with the first in view last night. It promises well.

Dora, earthy, pulchritudinous and compassionate, a forgivable sinner, is first encountered taking leave of her boyfriend before joining the community and measuring herself once more, and

obviously hopelessly, against her husband's superiority. He, an art historian examining the ancient manuscripts of the adjoining abbey, has already added the approbation of the community to his own highly developed self-esteem.

Into this clutch of aspirant saints, who have not yet reached an altitude where the clay has been left behind, moves Dora, willing but inescapably worldly, tip-tapping on high heels where flat shoes make no sound. They are described to her as "an uncomplicated little group", a simple definition that makes us aware that the making of characters about to be unmade. And the unmaking is soon under way. It makes for a gripping start.

Dennis Hackett

## Theatre

## Man as predator

Follies Berserk

## Cockpit

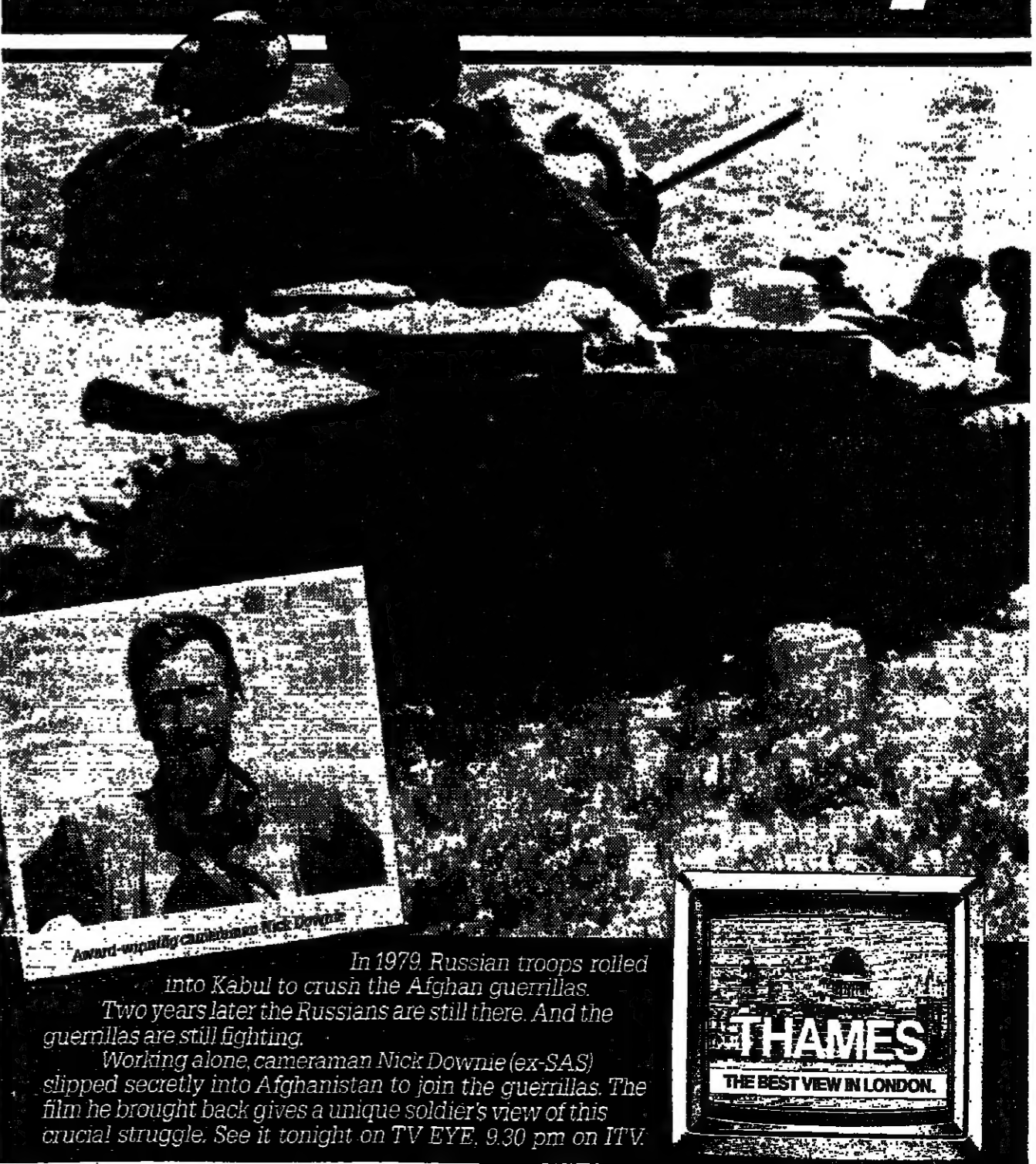
Whatever injuries men have dealt out, the Three Women Mime Company are ready to take revenge. One of the sharply pointed numbers in their *Follies Berserk* is a monumental indictment of the male as predator, yet the materials are light and the abstract. Peta Lily, a pretty white-faced clown, stands waiting somewhere on a street while male voices telling her to cheer up and asking the time become threatening, sexual and ominous. A powerful, empty raincoat moves behind her as she backs away in fear and the suddenness of the following assault is a graphic illustration of the woman's state of mind, and of the actual threat posed by man as rapist.

In another imaginatively conceived item, called "Businessmen", the male sexual image is ruthlessly skewered. It opens with walking neckties and jackets, picture which resolves into the competitive figures of the three women, Miss Lily, Claudia Prielzel and Tessa Schneidemann jostling each other for the favours of the secretary, an inflatable sex-doll with a shorthand pad in the place of sexual parts. When they decline into drunkenness at an office party they suggest the grotesqueries of Steven Berkoff in *Decadence*, although their actions are never as defined or as detailed.

Absolute command of their movements is lacking, but in their sort of mime, which uses words, recordings and painterly images — often with a suggestion of Magritte — the compensations are in the ideas. Not everything is formally feminist, and one of their most successful items is a spoof of Agatha Christie stories with three old women plotting each other's murder, while another piece explores the absurdities of carrying handbags. Nonetheless, they articulate a feminine view of the world, particularly in the "Follies" section where a striptease is translated into a mother's unwavering of an infant.

Ned Chaillet

## Afghanistan: Where the cold war heats up.



In 1979, Russian troops rolled into Kabul to crush the Afghan guerrillas. Two years later the Russians are still there. And the guerrillas are still fighting. Working alone, cameraman Nick Downie (ex-SAS) slipped secretly into Afghanistan to join the guerrillas. The film he brought back gives a unique soldier's view of this crucial struggle. See it tonight on TV EYE, 9.30 pm on ITV.



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## BANKERS AND THE BANK

One can sympathise with the Cabinet as it grapples with the Monopolies Commission's report on the future of the Royal Bank of Scotland. At any time ministers prefer the commission to take the odium of deciding delicate take-overs off the government's back. All the more devoutly have they wished the commission to come to a firm conclusion on this occasion, when the Governor of the Bank of England has placed his own prestige in favour of one bid, and against another, when the take-over has aroused such strong feelings within the Scottish community, and when half the nation's departments of state from the Foreign Office to the Treasury have become embroiled in the dispute.

By all accounts, the commission has stepped back from the final responsibility and put the ball back into the Government's court. And that, although not a particularly brave decision on the part of the commission is where it should be. The Royal Bank of Scotland take-over has raised issues of the future of banking control, the status of the Bank of England, relations with China, and the future of Edinburgh as a financial centre, which are far beyond the normal questions of monopoly and free competition raised by a con-

tested bid. By adamantly opposing the bid from the Hongkong and Shanghai Banking Corporation the Governor of the Bank of England has made it difficult for ministers, let alone the Monopolies Commission, to gain any advice without damaging the prestige of the whole Bank of England. By proceeding with the bid against the Governor's advice, the Hongkong Bank has inevitably challenged the whole system of discreet control and informal guidance on which the banking system is regulated.

The compromise response, and the one which the Monopolies Commission seems to have been tempted into, is to avoid offence by using the Scottish factor as grounds to refuse both suitors. Thus all parties would be equally disappointed because all would be disappointed equally. Yet this would solve nothing. It would not ensure the future of an independent Royal Bank of Scotland, whose directors have stated that they must merge if they are to thrive in a competitive international scene. It would not meet the interests of the Royal Bank's shareholders, whose shares have already fallen 50p on news of the Monopolies Commission. It would not meet the questions of compe-

tiveness posed by the projected British clearing bank system. Above all it would not meet the problems posed by the challenge to Britain's informal system of banking controls.

The Governor of the Bank of England has attempted to enforce these informal controls through discreet guidance and he has had his bluff called. Informal controls only work when the participants are prepared to accept them voluntarily and when the regulator has the judgment not to push advice beyond the point where his authority will be challenged.

This is the nettle which the Cabinet must now grasp. Unless it feels that the Royal Bank's employees and shareholders can do better independently, or unless it believes that there are strong financial or moral grounds for refusing the Hongkong Bank's entry — and neither seem sensible beliefs on present evidence — then it should accept that the old order is dead and that the market should take its course. Banking could do with the competition of a new entrant and that entrant is best chosen on the basis of the suitor who values the Royal Bank highest. The pieces of banking regulation can then be picked up, and legislation introduced as required.

## MR GORMLEY VOICES HIS DOUBTS

As the miners begin to cast their votes in the pithead ballot today, many of them may feel that they are making a bet which they can win, but cannot lose. Backing the call for a strike "if necessary" does not commit the union to action, and there may be a few extra pounds to be squeezed out of the National Coal Board by threat alone. But industrial disputes take on a momentum of their own, and a vote now for a strike would put matters on a footing where modest compromise or retreat would become far more difficult, and a strike might become inevitable even without most of those involved wanting one.

One experienced eye, at least, sees that the bet is not without risk of loss. Mr Joe Gormley, still president of the union, has written in yesterday's *Daily Express* to give forceful warning, in funeral black borders, of the dangers to the union, the industry, the labour movement and the country that might follow a coal strike. He believes that the board's financial position rules out a concession of "more than a few quid", and adds that there is not a union in the country which has done better since Mrs Thatcher moved to Downing Street — an observation

which is probably true, though almost equally unwelcome to Mrs Thatcher and Mr Scargill.

The miners' claim is for 23 per cent, and the coal board's offer stands at 9.5 per cent, or 10.5 per cent for men with long service. The claim is far in excess of the present rate of inflation (about 12 per cent). It is based on an assessment of what is needed to restore miners to the position they were given by the 1972 Wilberforce award. The custom of negotiating to return to some past high point of negotiating success was, of course, one of the most fruitful hasteners of inflation in the sixties and seventies. In this instance, the claim cannot be sustained either in terms of the industrial pecking order or of purchasing power: miners have risen in the industrial league, even if no price is put on their relatively high security of employment these days. The cost of living since 1972 has risen 274 per cent, while miners' earnings would have risen 385 per cent even if they accepted the offer on the table.

The union's claim is little more than a bargaining position. Much more rigid imperatives determine the size of the board's offer. In spite

of the Government's energetic efforts to encourage industrial markets for coal (another service for which Mrs Thatcher deserves the union's gratitude), coal sales depend critically on being able to remain competitive with other sources of power and (in the increasingly important export market) with foreign coal producers. Many customers would simply be driven out of business by a large price increase.

The offer already leans quite heavily on speculative factors: it would commit the pay bill three-quarters of the predicted income from the price rise that took effect in November. The board's expensive programme to develop new capacity as old faces are worked out will be threatened unless this financial year's 4 per cent improvement in productivity is maintained next year. February's triumph over pit closures did not alter geological realities: the NCB closed ten pits last year, the labour force shrank, and recruitment dropped sharply. Coal mining can only keep up production and employment by a constant process of re-investment. Even if the miners succeeded in exacting an offer, a better offer than the present one, they could only do so at the expense of the future of their own industry.

## MR REAGAN'S CHINA TRIANGLE

The decision of the American government this week not to supply aircraft to Taiwan might have satisfied the Chinese if it had been made six months ago. Mr Holdridge's talks on Sino-American relations in Peking have shown that it is no longer a concession large enough to allay China's distrust of President Reagan. Further talks on arms sales to Taiwan and other aspects of the deteriorating relations between China and America are promised. Taiwan will remain the crux.

In Office President Reagan has not modified his attachment to Taiwan. At first he ignored the advice of the Pentagon and the CIA that the advanced aircraft were not necessary for Taiwan's defence. Representations by the Chinese Prime Minister, Mr Zhao Ziyang, and the Foreign Minister, Mr Huang Hua, do not appear to have made much impression. In press attacks the last few weeks the Chinese have made clear that their concern over Taiwan is quite strong enough for it seriously to damage relations with the United States, denying that American friendship in face of the Russian enemy was so valuable as to allow them to overlook American action over Taiwan.

China's distrust first arose with Mr Reagan's promise that "official" relations with Taiwan would be resumed under his presidency, despite the withdrawal of American recognition of Taiwan's government and the formal relations with Peking determined by President Carter.

Although the word "official" has had to be swallowed, President Reagan has not been diverted from treating relations with Taiwan and those with the Chinese mainland as two separate questions for each of which a unilateral American policy could be decided upon.

It is easy to trace and to explain the entrenched attitudes on both sides. President Reagan's emotions probably go back to the pro-China sentiment that reached a peak during the war. Hopes were dashed by the communist victory in 1949. It coincided with the height of the cold war in Europe: an appalled American chagrin at this "loss" of an American ally was the result. When the chance of the Korean war enabled President Truman to lay down the barrier to the seventh fleet to save Taiwan the Chinese, passionately concerned to unify their country, saw themselves foiled in the last act of a civil war that promised to attain China's unity for the first time in this century.

Taiwan became in some American eyes what it proclaimed itself to be, the true government of China, temporarily displaced by communist and therefore un-Chinese puppets of the Soviet Union; or it was manifestly part of the "free world" in the global division of the world that captured the American mind in the fifties; or, even if the democratic credentials of its government were found wanting, it was an island that loved America and could be loved in return. From such an alluvium of emotion President Reagan's feelings grew to the

point where he could see no reason to deny any needs that Taiwan pressed upon him, even though an unyielding anti-Russian China had become a card in the global game. Taiwan and China evidently occupied different corners in his scheme of things.

This wartime and post-war American sentiment — in an older generation — has never weighed up the more deeply rooted emotions of Chinese nationalism. These are not a product of the last forty years, they go back at least to the cession of Taiwan following Japan's defeat in China in 1895, a far more powerful stimulant to Chinese nationalism than the opium wars earlier in the century. Since Mr Deng's regime in China today is basically one that has turned away from revolutionary aims to return to the national aims of unity and strength that blossomed after 1895, it follows that Taiwan is the missing piece that matters most to China's unity, a piece that was snatched from them by chance and misfortune in 1949.

But Taiwan, of course, is a very different problem for China now than it was in 1949; it has become a property not easily subject to takeover. How can such a phenomenon of economic growth be absorbed by a mainland whose record in the last thirty years has been mostly turbulent and unpredictable? Mr Deng is seized of such facts and knows that it will take time before the security and progress he is trying to bring about in China can make a marriage even seem tolerable for Taiwan.

## Helping industry to plan ahead

From the Director General of the British Institute of Management

Sir, Your assessment of the 1982 economic prospects (leading article, January 2) presented a view with which management and industry would broadly concur. You state, however, that Government can do little to ensure that manufacturing companies which are improving productivity can continue to do so in "a more normal economic environment".

I do not consider that Government should be led to believe that it is incapable of offering assistance to industry whose efforts during a time of unprecedented economic recession have been notable.

You rightly point out that investment cuts have fallen puny on capital expenditure programmes. Surely then there is a case for a modest relaxation of the PSBR target and for lifting the present restrictions which prevent available private finance from being invested in public sector projects. The removal of the restraints would amount to a slight deflation, which would perform the invaluable service of absorbing the extensive spare capacity in private manufacturing industry but should not be seen as contributing to the chronic inflation which it is essential to overcome.

It is of equal importance for Government and in particular the Department of Industry to realise that industrial prosperity must ultimately depend upon the creation of a stable environment in which business can plan for the future.

To this end it is imperative that Government takes a lead in identifying and promoting a clear industrial policy which will ease our transition to a modernised industrial structure.

If Government implemented these measures it could do so with the assurance that any glimmer of light at the end of the tunnel would not be discounted as a mere hallucination.

Yours faithfully,  
ROY CLOSE,  
Director General,  
British Institute of Management,  
Management House,  
Parker Street, WC2,  
January 5.

## Marconi in suspense

From Mr Bernard Conlan, MP for Gateshead, East (Labour)

Sir, The inordinate length of time being taken by the Ministry of Defence to make a choice between the competing bids of the Dutch, Hollande Signaal Apparaten, and Britain's Marconi, to supply the Tracker Radar for the new Lightweight Seawolf missile system for the Royal Navy, is creating severe difficulties for Marconi in Gateshead.

Leicester and Chelmsford and is destroying the morale of the 6,000 workforce.

As the Prime Minister frequently reminds us, it is the Government's settled policy to purchase defence equipment abroad only when an alternative British product fails by a substantial margin on grounds such as cost, technical and operational characteristics or timescale.

It is understood that the Royal Navy have expressed a preference, albeit marginal, for Marconi on grounds of technical performance, cost, experience, integration in ships, continuing support to the Fleet, etc. This being so, why is the decision being constantly deferred?

Current uncertainty is damaging the export potential of the Marconi equipment for, quite understandably, other navies are waiting for evidence of acceptance by the Royal Navy. Overseas customers will not wait too long.

There are, of course, wider implications. In these areas of extremely advanced technology, breaking up teams working on new techniques of straw-tie breeding, tissue culture, growth regulators, and microbiological safety in foods, all of which are more important in horticulture than microchips, it is folly to spend 64,000 "bits" of information on penny-piece-sized chips when you sack the men who are finding the knowledge that can only go on a chip if

Yours sincerely,  
BERNARD CONLAN,  
House of Commons,  
January 6.

## Shakespeare in China

From Mr Paul Gotch

Sir, Mr Chen Chun Yeh, in his interesting account ("A hit, a palpable hit in China" January 2) of Shakespeare in China mentions Toby Robertson's help with the production, in Chinese, of *Measure for Measure*. He did not mention, however, that this collaboration was made possible by the endeavours of the British Council, perhaps because he believes that this would be immediately understood by your readers.

May I, therefore, explain that it was as a result of the successful council visit to China of the Old Vic in 1979 that Toby Robertson, with the designer, Alan Barrett, and lighting specialist, Keith Edmundson, returned in 1981 to direct the Peking People's Art Theatre production of *Measure for Measure*. This was part of the consolidation of the council's work in China.

The British Council's annual report for 1980-81 also mentions the tour of China by the Music Group of London, who performed with such notable success in Peking and Shanghai, teaching master-classes in the country's premier conservatoires, that invitations have been issued for a return visit by members of this group, also.

Yours faithfully,  
PAUL GOTCH,  
15a Copse Hill,  
Wimbledon, SW20.

## Tax decision on North Sea oil

From Mr Algy Cluff

Sir, The Chancellor and the Secretary of State for Energy are shortly to consider their response to the representations on taxation recently submitted by those oil companies engaged in North Sea exploration and development. The form of that response is a matter of the greatest concern to our country and it is important that the issues are appreciated by the public; for, if there is to be no regard paid to the oil companies' case, there will surely be violent recrimination in the future and it is accordingly as well to establish the position now.

The problem, simply stated, is that political perception of the North Sea, to the extent that it exists at all, is confined to regarding it as a device to raise revenue rather than to create wealth. This perception has not led to the North Sea acquiring the dubious reputation of being the most heavily taxed oil province in the world barring Norway, which is in no sense comparable, having a population less than a tenth of our own.

The British North Sea fiscal system (apart from being virtually incomprehensible so badly has it been constructed) has ceased to acknowledge the profound uncertainties and the unparalleled commercial risks which the oil companies face. The tax rate is currently suspended between the unreasonable and the irresponsible.

I believe that the Department of Energy is aware of this and of the disturbed state of the oil companies' morale. I fear that the Treasury will maintain its relentless pursuit of additional revenue. It is, Sir, deeply depressing to be part of the fledgling British oil industry and to realise how much real wealth,

financial and intellectual, it could generate for Britain if only Government would provide for the oil companies to profit to a degree consistent with the risks they take.

The odds against a commercial oil discovery being made in the North Sea must now have lengthened to approximately 14 to 1 and the size of such fields is diminishing all the time. The present tax rates (cumulatively amounting to around 90 per cent on profits, including a supplementary petroleum duty which is, in practice, a tax on revenue regardless of profit) would be unreasonable if the odds were practically even.

I urge the Government to reflect how much good for this country will result from a positive response to the proposals of the United Kingdom Offshore Operators' Association (UKOOA) and of the Association of British Independent Exploration Companies (BRINDEX) and to consider carefully the implications of sustaining the severe pressure under which the industry operates.

Being a truly international business the prospect increases daily that the lights of Aberdeen will be if not factually extinguished, sadly dimmed in the coming years. The story of North Sea exploration is undeniably one of conspicuous success. However, Ambrose Bierce once defined success as the one unparagonable sin against which we can summon, but it will not be surrendered.

It is most apparent, perhaps, in our support of macro-economics, where all the main strands of research are vigorously present in our portfolio; both those bits which ministers may seem to like and those they dislike. No monoliths are built in Temple Avenue.

We do have to reject nearly 75 per cent of the applications that come to us, partly on grounds of timeliness or promise, partly because of shortage of cash. I keep an eye on the margin of rejection.

The last batch of near misses that I inspected contained some good stuff that we should have liked to have funded — but they were a mixed bag, not left wing nor right wing, not especially "useful", nor especially "fundamental". Just good research.

Yours sincerely,  
MICHAEL POSNER,  
Social Science Research Council,  
1 Temple Avenue, EC4,  
January 12.

From Professor Robert Moore

Sir, In the article on the proposed Social Science Research Council cuts and reorganisation (January 8) David Walker attributes to me views I attributed to others.

I have always found the facts about poverty, educational inequality and the occupational disadvantage of women to be quite neutral. Critics of the social sciences (by no means confined to Conservative back benches) seem to think that the facts are themselves political. As a social scientist I subscribe to no such simple, and simply untenable, view.

Yours sincerely,  
ROBERT MOORE,  
University of Aberdeen,  
Department of Sociology,  
Edward Wright Building,  
Dunbar Street,  
Old Aberdeen,  
January 11.

From the Archdeacon of Oxford

Sir, I think Professor Colonel Draper (January 8) has been rash in venturing to criticize the excellent and well-informed letter of Mr Terence Pfitze (December 30).

In view of the improper and unfeeling use of the Golan by Syrian forces between 1948 and 1960, it is not surprising that "Israel has introduced... a system of law administration that would function in... a legal vacuum".

Professor Draper is correct in stating that "Israel law has, in practice, been operative in the Golan for the past 15 years". Syria had no option but to keep out, following the defeat of Syrian forces in 1967.

If Syria and the other Arab countries would follow Egypt's example in the Camp David accord there could be the basis for a full and final peace between Israel and her Arab neighbours in that part of the Middle East which is so much to be desired.

Yours faithfully,  
C. WITTON-DAVIES,  
Archdeacon's Lodging,  
Christ Church,  
Oxford,  
January 8.

From Mr E. J. Nickson

Sir, Your recent correspondence tell us that Ruritania employs Slavonic words for its currency, the party newspaper and capital city. My recollection of *The Prisoner of Zenda* and its sequel is that all Ruritaniens, including the proletariat, spoke German as their native tongue (thus enabling our hero to substitute effectively for the King).

We all know that, at the end of the last war, the Allies forced Poland to move bodily westwards and thus to occupy a large slice of German-speaking territory. But it was new to me that a similar thing had happened in Ruritania. Perhaps this has only now been disclosed from the latest opening of official records under the 30-year rule?

Yours sincerely,  
E. J. NICKSON,  
Secretary, Bund of Hope,  
31 Lowfield Road, W3,  
January 11.

## Social science in practice

From the Chairman of the Social Science Research Council

Sir, May I offer your readers a foretaste of what we shall be talking Lord Rothschild? We seek to support both fundamental and practical work. I myself may tend to philistine vulgarity — in my own work I actually try to be useful; but not all good empirical work is of that kind; by any means, and I can assure Professor MacRae (January 12) that much of our research is far removed from "plumbing".

Alas, by use of those ironies of style, those journalists who are even more philistine than myself lampoon us for supporting, say, "useless" social anthropology, while the most distinguished members of the professorial deplorable our attempts to be useful.

Despite gunfire from both sides, we will continue to encourage both sorts of research, because we are certain, as Professor MacRae points out, that they are mutually supportive.

Equally the work we support has in the past and will in the future be chosen for its excellence; we will encourage such work without fear or favour or political interference. Our independence under our royal charter will be used with discretion and with wisdom as we can summon, but it will not be surrendered.

It is most apparent, perhaps, in our support of macro-economics, where all the main strands of research are vigorously present in our portfolio; both those bits which ministers may seem to like and those they dislike. No monoliths are built in Temple Avenue.

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C. WITTON-DAVIES,  
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## Capital error

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Yours sincerely,  
E. J. NICKSON,  
Secretary, Bund of Hope,  
31 Lowfield Road, W3,  
January 11.

## Outside Parliament

From Mr Peter Tatchell

Sir, Frank Field (January 9) accepts the legitimacy of extra-parliamentary action prior to the granting of the universal franchise. However, he apparently doubts that it is possible to cite equally impressive and justifiable cases against the franchise since the adult suffrage was won.

This is a surprising view from a parliamentary representative of the Labour movement. The recent history and finest hours of this movement have included struggles not only outside of Parliament, but sometimes even outside the law.

In response to threats of longer hours, wages cuts and lockouts in the mines the 1926 General Strike brought organised labour into direct confrontation against the elected government.

To defend impoverished tenants from exorbitant rates and rents, unjust legislation was defied by Labour councillors at Poplar in 1921 and Clay Cross in 1971.

Only a decade ago, free and independent trade unionism was preserved at the cost of workers refusing to recognise the Industrial Relations Act. The AUEW incurred huge fines and five

dockers were imprisoned for contempt of court. Their release, and the defeat of the Act, was won through a campaign of non-compliance with the law and the threat of large-scale strikes.

The miners' struggle for a living wage in 1974 even went so far as to bring about the eventual defeat of the Heath government. Far from condemning the strike, the movement applauded and took advantage of it to secure the election of a Labour government.

These extra-parliamentary actions were necessary because rulers ignored the voices of the poor and the powerless. They will probably be necessary again in the future to oppose elected, but tyrannical, governments and oppressive laws.

Labour has never believed that election by universal franchise gives any government a legitimate carte blanche and automatic moral authority for its every action. Odious and draconian laws have always been challenged by the Labour movement through extra-parliamentary action — and hopefully they always will be.

Yours sincerely,  
PETER TACHELL,  
45 Arrol House,  
Rockingham Street, SE1,  
January 10.

## Farming research cuts

From the Director of the Henry Doubleday Research Association

Sir, Lord Balerno's letter (December 22) about the story of the Agricultural Research Council's surprise attack on our heritage and our future in the fields of agricultural and horticultural research. They are also shutting down the Pomology and the Food and Beverage Divisions at Long Ashton Research Station, and both these and the Scottish closures will save £3m by 1983-84, a trifling sum compared with the annual loss on flying Concordes.

About 100 first-class scientific men will join the unemployed, breaking up teams working on new techniques of straw-tie breeding, tissue culture, growth regulators, and microbiological safety in foods, all of which are more important in horticulture than microchips, it is folly to spend 64,000 "bits" of information on penny-piece-sized chips when you sack the men who are finding the knowledge that can only go on a chip if

someone can do the research that finds it.

Included in this short-sighted slaughter is the work of K. G. Stott, Britain's only willow expert, on harnessing biomass energy that grows on trees, with our national collection of only 300 varieties, compared with Sweden's 3,000. What is the use of training teenagers for scientific careers when the institutions that serve agriculture and horticulture, our most efficient industries, are destroyed by those who do not know enough to realise that when you cut out the growing points of trees you cripple them forever?

Lord Balerno's suggestion of axing the Agricultural Research Council instead and dividing the saving between the research stations is an excellent one. These quangoes should be the first to go.

I am, Sir, yours, etc.  
WRENCE L. HILL,  
Henry Doubleday Research Association,  
Covent Lane,  
Bocking,  
Braintree, Essex.

This is something that a London *Verkehrsverbund*, suitably staffed, might be able to correct.

But there is a much broader aspect of transport planning in London which a policy body might be able to tackle, provided it is headed by people whose thinking is untrammelled by consideration of the vested interests of the operators and their employees and who are prepared unflinchingly to determine what are truly the most economic methods of providing adequate public transport for Londoners.

This is the question of whether massive investment in the BR rail system makes economic sense; and whether at any rate some of the routes at present occupied by BR rails would not be serving a far more valuable social function if they were converted into limited-access roads, on which express bus services could be run.

The GLC ought even now to be giving urgent attention to this question, but is failing to do so; and the Government ought to make clear to the GLC that it is prepared in principle to make BR evacuate certain routes. After all the routes belong to the nation, and BR is able to keep functioning only because the Government gives it massive subsidies. Thus the Government is both BR's landlord and its paymaster, so there can be no question that the Government controls BR.

Yours faithfully,  
NIGEL SEYMER,  
Bathelton Court,  
Taunton,  
Somerset.

It performs exactly the functions which Sir Peter describes, i.e. it plans the development of a truly integrated public transport system: contracts with operators, including the main-line railways, to supply services at an agreed price; receives all revenues from fares and other sources, and acts as paymaster to the various operators (which may include private enterprise firms).

The growth of this type of organization in Hamburg was stimulated by the fact that the main-line railways (DB) had for years operated cross-town suburban services (known as S-Bahn) which were inevitably part of the local transport system, and they took the initiative in proposing the development of the S-Bahn system.

This is in stark contrast to the total lack of interest of BR in developing cross-town services in London even where existing tracks are available (for a service via Blackfriars and Farringdon), which is no doubt due to "regional thinking" within BR.







The slide to protectionism page 15

# Business News

THE TIMES THURSDAY JANUARY 14 1982

**IMI**

for building products, heat exchange, fluid power, special-purpose valves, general engineering, refined and wrought metals.

IMI plc, Birmingham, England

## UK hopes in £800m Saudi power plan

By Rupert Morris  
The British electricity supply industry has won an important victory over American competition in Saudi Arabia by persuading the Saudis to adopt a Saudi power plan.

British Electricity International, the overseas consultancy arm of the Central Electricity Generating Board, is advising the Saudis in Riyadh, the capital, where a £400m supply system is planned, with much of the construction, electrical and control equipment hopefully to be supplied by British firms.

But the bigger prize is the national grid system which will cover 5,000 miles and cost about £800m to build between now and the year 2003.

The Saudis are working to a plan prepared by the American consultant Charles T. Main, but have rejected its advice in two significant areas.

The American system, based on gas turbines, would use voltages of either 220 kilovolts or 500kv. The system favoured in Europe is 400kv, and BEI's representations to the Saudis have been supported by the French, who are influential in the south, and the Germans, who have a foothold in Jeddah and the west. A 380kv system is now expected to be adopted nationally.

The Saudis are also moving away from reliance on gas turbines in favour of thermal steam plants, with big power stations cooled by sea water on both the Arabian Gulf and Red Sea coasts. BEI reckons the new system will save 70 million barrels of oil a year.

It has been a deliberate Saudi policy to have a multiplicity of foreign technical advice and BEI, which has a 50-man team in Riyadh, seems to have won increasing Saudi confidence.

BEI's success is all the more welcome as Britain has lost ground 10 years ago with the Saudis' decision to opt for American frequencies of 60 hertz, rather than the British 50 hertz — giving American manufacturers a head start.

The new electricity programme will provide opportunities for British firms to supply switchgear, cables, fittings, process plant and high technology control systems.

## First step by a'Court to capture ACC

By Philip Robinson and Paul Maitland

Australian financier Mr Robert Holmes a'Court last night took the first step towards making a takeover bid for the voting shares of Lord Grade's Associated Communications Corporation.

His proposals to surmount the major obstacle to gaining control of ACC — cutting back the 51 per cent which ACC owns of Central Independent Television — were given to the Independent Broadcasting Authority late last night. The IBA said that a decision on the proposals, details of which were not known, would be made after they had been considered at a meeting of the Central Independent television board this morning.

The IBA said that Mr Holmes a'Court has given it notice that he was making what they described as an offer for ACC.

The IBA already said that it will not agree to a non-British resident controlling a United Kingdom company.

ACC suspended its shares on the Stock Exchange on Monday pending an announcement concerning a change of control of the company. At a suspension price of 54p, the company was worth around £25m. Mr Holmes a'Court, who joined the board last month, took 3 per cent of the voting shares, spent most of last year picking up more than 50 per cent of ACC non-voting stock, now worth £15m.

It is widely expected that his plan will mean the end of Lord Grade as a 220,000 a year chairman of a company he built up over 25 years but which lost £5m in the first half of this financial year.

Lord Grade can influence around 27 per cent of the voting shares and it is believed that he will sell Mr Holmes a'Court enough of these to give the Australian control, and then take a role as president of the company.

But the move by Mr Holmes a'Court over ACC is thought merely to be the first of many in the United Kingdom. Australian sources say he has identified between £100m and £200m of property



Holmes a'Court: media ambitions.

assets within the group which he could liquidate to finance the purchase of a new company. Fleet Holdings, being set up by fellow ACC director, Lord Matthews, which will include all Express Newspaper titles, Morgan-Grampian and the South Wales Argus. The publications are at present owned by Trafalgar House.

According to Australian analysts, a clue to Mr Holmes a'Court's intentions will come from which of his companies he uses to gain control of ACC. They say that if he uses a loss-maker, it will indicate that he intends to sell on to a third party, possibly after enfranchising the non-voting shares. This is based on observations of his past takeover battles.

It is known that Mr Holmes a'Court has ambitions in the United Kingdom to be an influential newspaper and television owner.

Meanwhile, in a statement yesterday, ACC — which is embroiled in a legal battle with 10 of its non-voting institutional shareholders led by the Post Office pension fund who are objecting to the near £750,000 golden handshake to dismissed managing director Mr Jack Gill — said Friday's special shareholders meeting to approve the payout has been adjourned.

The group has already given an undertaking to the Post Office that it would not pay over any money or sell Mr Gill any property

## Lloyd's to pay for Gulf war ship's bill

A judge has ruled that Lloyd's of London underwriters are responsible for what may be a \$100m (£33.3m) insurance bill for some of the 70 ships held up in the Strait of Arab waters as a result of the Iran-Iraq war.

Mr Justice Staughton yesterday gave his decision on a dispute involving a German-owned ship, the *Bamburi*. It is being used by underwriters in establishing guidelines to determine whether those writing war risk business or those writing blocking and trapping business will have to make shipowners' claims.

The judge decided that there was a "restraint of prices", which means that vessels had been stopped from sailing in the Gulf since the date the Iraq Government prevented navigation in the waterway, but that this could not be considered a peril of "hostilities or warlike operations".

There was a difference between such a peril and the apprehension of it, the judge said.

Legal experts last night interpreted the decision as meaning that underwriters of war risk clauses are liable for claims, except where there are clauses, known as "long J exclusions", which specifically exclude the Gulf region from claims resulting from "restraint of prices".

Ships have been held up in the Gulf for over a year. They have a total insurance value of around \$400m. Some claims have already been settled, but others have been awaiting the outcome of Mr Justice Staughton's decision.



Sir Ernest Harrison: Tuning in to higher profits

## Decca fixes on to profits course

Decca is poised to make a strong contribution to Sir Ernest Harrison's Rascal Electronics group. After beating off GEC in a £180m takeover battle almost two years ago, Rascal lost £2.4m

last year on the ailing television to marine radar business. Thanks to the sale of its colour television business and loss elimination elsewhere, Decca contributed £5.27m to Rascal's first half

pretax profits, compared with losses of £5.2m for the same period last year. Rascal's first half profits rose 45 per cent to £38.4m on a 26 per cent sales gain to £304m.

Financial Editor, page 15

## Northern Foods in £37m American deal

By Drew Johnston

Northern Foods, the Hull-based dairy products, meat and cereals group has bought the American Keystone Corporation, the main suppliers of frozen hamburgers to the vast McDonald's fast food chain, in a deal worth \$69.13m (£37m).

Northern, whose customers also include Marks & Spencer and Sainsbury, raised £41m by a rights issue in November and has since been expected to further its presence in the United States.

In 1980 it paid £25m to buy Bluebird Foods of Philadelphia. To buy Keystone, which is 22 per cent owned by Mr Herbert Lotman, chairman and president, with his wife, Northern paid \$22 for each share which had been trading at \$157-16 before the bid.

Mr Jack Clayton, Northern's finance director, said yesterday he expected about half the cash for the deal would come from the proceeds of the rights issue, although final details of financing have not been worked out yet.

Speaking from Philadelphia, Mr Nicholas Horsley, chairman, said he expected the other half of the \$69m purchase price would be financed through new debt.

In the 18 months to November, Keystone recorded pretax profits of \$7.8m, a 70 per cent increase on \$4.5m last year. Sales grew 13 per cent to \$357m. Over 90 per cent of the company's output goes to McDonald's, representing around 45 per cent of the food chain's total hamburger requirement.

Keystone also has a joint venture operation with McDonald's British affiliate for the manufacture and sale of frozen hamburgers. Mr Clayton said this operation is fairly modest, but Northern, which has no fast food outlets, expects this to grow along with the McDonald's chain.

Further growth of Keystone's United States operation is expected to come from supplying poultry products to McDonald's.

And while market opinion is that the hamburger market in the United States is fairly mature, diversification into chicken-based products, such as the McDonald's "Chicken McNuggets", is expected to provide opportunities for growth.

Northern's ordinary shares dipped 1p yesterday on news at the deal. "Keystone provided all the poultry products for McDonald's, but has recently been joined by a second supplier, Mr Horsley said.

Under the terms of the deal, which will have to be approved by the companies' shareholders and both governments a new company will be set up and Mr Lotman will stay on as chief executive.

Financial Editor, page 15.

## TREASURY OPTIMISTIC ON OUT-UT

By Francis Williams

Recent step improvements in productivity may herald a permanent shift to more rapid productivity growth, the Treasury cautiously concludes in an article published yesterday in its *Economic Progress Report*.

It takes a significantly more optimistic line than some other analysts, including the Bank of England who fear that productivity gains will be largely dissipated once economic growth gets under way because employers will start recruiting much of the labour shed during the recession.

But the Treasury believes employers will continue to face strong pressures to restrict recruitment to keep down costs and improve efficiency. It cites expectations of "only moderate economic recovery" — low profitability in many companies and, in manufacturing, stiff foreign competition.

ICI expansion  
Imperial Chemical Industries is acquiring, through ICI Americas Corp., full ownership of Rubicon Chemicals as a further step in strengthening its world polyurethane business.

Rubicon had a 1981 turnover of \$100m (£53m).

## Building society figures reflect poor homes market

By Lorna Bourke

Depression in the housing market is beginning to show up dramatically in the building societies' statistics. Lending continues to decline and stood at only £800m for December compared with well over £1,000m a month during the summer. Net new commitments slipped even further to £762m.

Whether this is due to lack of demand from homebuyers is difficult to estimate, since the banks have now moved in and taken a sizable slice of the home loans market. Recent estimates suggest that the banks may be advancing one in three of all home loans.

But if demand does pick up, the building societies could find themselves in a tricky position. Net receipts for December were better than expected, struggling up

from their six-year low of £65m in November to £203m. The improvement was described as very encouraging by Mr Richard Weir, of the Building Societies Association, who pointed out that December was usually a poor month for societies because of Christmas spending.

The December revival does not obscure the fact that the figures for the year are poor. Net receipts for 1981 fell by nearly £350m, the first decline since 1978, which was down from a record for net receipts of £4,722m in 1977.

The societies are predicting an improvement in January — not entirely surprising since net receipts traditionally rise at the start of the year when interest is credited to investors' accounts.

Financial Editor, page 15

## Lords seek disclosure by banks

By George Clark, European Political Correspondent

A House of Lords committee yesterday criticised an EEC directive for failing to insist that all banks should be forced to publish financial statements showing their true profits and reserves, and asked the Government to press strongly for an amendment.

The Lords European Affairs Committee, under the chairmanship of Lord Plowden, objected to a clause which would enable banks throughout the European Community to maintain undisclosed reserves in their accounts, and said the purpose of the directive will be

vitiated if this was left in. "Meaningful comparison would be severely hampered if neither the profitability nor the net worth of the bank were disclosed."

Another recommendation is that the directive should cover substantially all deposit-taking institutions, whether or not they are limited companies. That would put building societies and trustees serving banks under the same accounting regime as banks and licensed deposit-takers.

Institutions which grant credit without taking

deposits should be outside its scope, the committee says.

Strong arguments were put by the Accepting Houses Committee and the London Discount Market Association for allowing undisclosed reserves, but non-banking witnesses were overwhelming hostile.

The directive would allow banks and the institutions to create undisclosed reserves by undervaluing their loans and advances by up to 5 per cent.

Fourth report of the Lords select committee on European Communities: annual accounts of banks (EU55).

## GOLDFINGER ON LLOYD'S COMMITTEE



Lloyd's underwriter Mr Ian Posgate (above) has been elected to the ruling committee of Lloyd's, the London insurance market, by the narrowest of margins. In the first by-election for a new member following the sudden resignation of Mr Robert Kiln last November, Mr Posgate received 1,264 votes

27 more than Mr Peter Daniels, the managing director of Lambert Brothers (Underwriting Agencies) who stood against him.

Nicknamed "Goldfinger" in the market because of the success of his underwriting syndicates, Mr Posgate has attracted criticism for his aggressive and competitive style and for the stance he has taken on the Lloyd's Bill.

He said he would fight to preserve free trade for the Lloyd's underwriters.

## Stock Markets

FT Index 527.3 up 2.7  
FT Gilt 52.30 up 0.38  
FT All Share 307.45  
up 1.23  
Bargains 13,168

## Sterling

\$1.8680 down 65 pts  
Index 90.3 down 0.4

## Dollar

Index 108.4 unchanged  
DM 2.28650 up 10 pts

## Gold

\$380.50 down 88.25  
New York: \$412.70

## Money

3 mth sterling 15½-15¾  
3 mth Euro \$14½-14¾  
6 mth Euro \$14¾-14½

## PRICE CHANGES

### Rises

Allied Colloids 13p to 155p  
Boustead 8p to 109p  
Danson Oil 9p to 485p  
Devenish 8p to 298p  
Fisons 9p to 160p  
Gen Accident 8p to 308p  
Horizon Travel 10p to 308p  
Lloyds Bank 10p to 130p  
Nthgate Explor 9p to 245p  
P & O 10p to 139p  
Rand M Prop 10p to 325p  
Redfern Nat 8p to 126p  
Royal 8p to 336p  
Unilever 8p to 618p  
Venterpost 8p to 399p

### Falls

Anglo Am Corp 21p to 619p  
Blyvoors 27p to 479p  
Castfield 10p to 420p  
Chesterfield 20p to 325p  
Cons Gold Fields 20p to 452p  
De Beers Ltd 12p to 335p  
Barrison Cros 12p to 750p  
TU Int 20p to 670p  
Kinross 31p to 519p  
Rio Tinto Zinc 9p to 417p  
SA Land 8p to 167p  
Sutherland PB 12p to 600p  
UK Invest 25p to 479p  
Wellcom 25p to 479p

## EEC fights on steel

European Economic Community industry ministers gave their backing in Brussels yesterday to Viscountess Davignon, the EEC industry commissioner, who has rejected anti-dumping complaints brought by eight American steel companies against European producers.

They agreed that high wages, obsolete plant and the strong dollar were to blame for the American industry's problems rather than competition from steel imports and are likely to send a message to the American Government setting out the EEC case.

## Swiss sales hit gold prices

The price of gold slumped to \$378 (about £201) an ounce at one stage yesterday. The fall was triggered by substantial selling out of Switzerland believed to represent liquidation of gold holdings by big investors. It closed in London down \$8.25 at \$380.50, its lowest level since November 1979.

Britain's industrial problems continued to depress sterling on world currency markets. It dropped a further 65 points against the dollar to end London trading at \$1.8680, while the index measuring its wider international value fell 0.4 to 90.3.

□ Statoil, the Norwegian state oil company, announced a new gas discovery yesterday which doubles the country's estimated reserves in its North Sea Sleipner field to at least 200,000 million cubic meters.

□ An Ipswich company formed only four years ago yesterday announced its first order worth more than £1m. W.E.M.S. Manufacturing is to build 220 generating sets for the Middle East.

□ Brazil achieved a visible trade surplus of \$1,200m (£640m) in 1981, its first since 1977.

## BUSINESS BRIEFING

### Now coal goes ro-ro

Coal is to be transported from Britain to Belgium for the first time using container ships instead of the more usual bulk carriers. Half a million tons of coking coal will be shipped over two years from Dover to Zeebrugge by the Sea Containers company for the National Coal Board.

The first shipment will be made next month under a contract between the NCB and the Carcoke company of Belgium. Sea Containers, which arranged the deal, will be paid about £2m.

The company says much of the extra expense of specially adapted containers is offset by savings on handling charges, and it hopes to win further orders for the transport of other bulk commodities.

The deal enables the NCB to dispose of surplus stocks of coal from its uneconomic Kent collieries and to maintain its export drive.

Coal exports in this financial year have almost doubled to nine million tonnes. Sir Derek Carr, NCB chairman, said in Glasgow yesterday.

Much of this coal is sold at a loss — and the Belgian deal is almost certain to be a loss-maker — but the Board believes that export links established now may become profitable later.

The Ferranti unit, called the ULA Designer, consists of a powerful mini-computer, a graphics display unit with a keyboard and all the accompanying electronics, accommodated in only 10 square metres.

The systems will be sold to the European and American markets.

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### Make yourself a CAD

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## Car sales set to rise

New car sales, thought to be 2 per cent down last year on 1980, should more than deliver this year, according to Mr Michael Lacey, director of Glass's Guide, the motor trade prices guide. Sales should recover by 50,000 vehicles to around 1.53m, an increase of 3.5 per cent over the probable 1981 outcome.

Imports' market share may ease marginally to about 55 per cent from 55.7 per cent, Mr Lacey says in *Credit*, the Finance House Association journal. He expects new car prices to rise by 13-14 per cent this year.

The Institution of Motor-cycling said yesterday that despite the additional 10 per cent sales tax, sales of motorcycles, scooters and mopeds reached 275,000 last year, the fourth best postwar year. Mopeds held up their sales compared with 1980.

Reporting on the cabinet session, the chief Government spokesman Mr Kurt Becker said that Dr Lambson made it clear that no sub-contracts with United States companies would be affected, although the United States companies acted as chief contractors.

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## Change gas tax plea

Taxes on North Sea gas must be changed if the gas is to be fully developed and chemical production sustained, Mr Robert Horton, managing director of BP Chemicals, said yesterday.

If the present system of taxing offshore oil production were also applied to gas, it would be "a serious disincentive" to chemical production, Mr Horton told the Edinburgh branch of the British Institute of Management.

He said legislation enabling companies to sell gas to other parts of their operations at stable prices for assessment of Petroleum Revenue Tax should be extended to outside companies.

We must not let the development of these resources grind to a halt because of a confused and potentially inhibiting tax system," Mr Horton said.

He said Britain needed a gas-gathering pipeline to replace the £2,700m scheme abandoned last year; he did not expect alternative schemes to come into operation until the late 1980s or early 1990s.

British Gas paid £130m to the Exchequer this month, bringing its total contributions to more than £500m during the financial year.

□ Japan's foreign ship orders fell 18 per cent to 5.3 million gross tons last year compared with 1980, the Japan Ship Exports Association said yesterday.

December's foreign orders fell 67 per cent to 204,000 gross tons on the same month in 1980.

**Martin**

Martin the Newsagent plc

Multiple retailers in news, books, stationery, cards, tobacco, confectionery and associated products

RESULTS AT A GLANCE — in £m

Sales 1981 1980  
107.4 95.8

Profit before tax 3.8 3.2

Earnings per ordinary share 48.2p 42.8p

Net dividends per ordinary share 10.5p 9.35p

\* record figures achieved with sales up 12% and pre-tax profits up 18%

\* final dividend increased by 12.3%

\* retail trading area is expected to increase by 35,000 sq. ft. in 1982

\* first ten weeks show sales up 12%

Copies of the Annual Report and Annual Review Document are available from The Secretary, Martin the Newsagent plc, Martin House, Ashwells Road, Brentwood, Essex CM15 9SF.











Latest European



## Rugby Union

## Australian coach defends his tactics

Sydney, Jan 13.—A pale but firm Australian coach, Bob Templeton, defended tactics on selection on the Australian tour of Britain when the team returned here today. Mr Templeton said at a press conference: "I accept the blame for whatever you want to say at my feet."

The opposition in Britain, the coach said, played mainly not to lose, rather than to win. "We were put under enormous pressure and found we couldn't run our own game. We were out of sync, we scored 63 tries in 23 matches, conceding nine despite bad weather, sloppy grounds and new rules interpretations."

The team manager, Sir Nicholas Sheehy, denied that the Australian captain, Tony Shaw, had learned of his dropping from the tour by the British press. Sir Nicholas said that the team had been in a state of confusion and that the captain had been told of his dropping by the team manager.

Asked about a story published in Australia by a Sydney journalist, David Long, on the team's selection, Sir Nicholas said: "How would he (Long) know? He was on the Continent with a group of tourists for many of our games."

Sir Nicholas said some of the older players like John Hipwell would probably be in the team, but he said that the team was not yet set.

Mr Templeton said the injury to Michael O'Connor and a later setback before the clash with Scotland had put the team in a difficult position. "The Michael Hawker was on the casualty list to compound our problems."

He said the hardest adjustment was to overcome the shifting of the Welsh inside backs and tactics employed against the Australian scrum.

Mr Templeton's observations about British rugby sound more like a man who has been in the game for a long time than a man who has just arrived. He said that the British game was more tactical and that the Australian game was more physical.

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## Dublin international postponed a week

By Peter West

Rugby Correspondent

The adverse weather, especially in Wales, has caused the international between Ireland and Wales, due to have been played in Dublin on Saturday, to be postponed for a week. The original date remains valid. It is 50 years since a big match was last called off at Lansdowne Road.

A joint statement from the Irish and Welsh Rugby Unions said that special account had been taken of the travel difficulties for the Irish team and supporters who would have faced a journey of 100 miles to Dublin. It was hoped that the Irish team would be able to travel to Dublin on Saturday.

The WRU coaching officer, John Dawes, said the postponement was a blessing in disguise. He said that the Irish team would be able to travel to Dublin on Saturday.

As things stand, both teams may be lucky if they get in any time before the end of January. The Irish team is expected to arrive in Dublin on Saturday.

Mr Templeton said the injury to Michael O'Connor and a later setback before the clash with Scotland had put the team in a difficult position. "The Michael Hawker was on the casualty list to compound our problems."

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## 1882 Calcutta Cup defeat spelt the end for England's captain

## How Hornby left the rails

The England-Scotland match of 1882 was played at Manchester, and won by Scotland by two tries to nil. It was the twelfth of the series and the fourth for the Calcutta Cup, which the Calcutta Club, finding themselves short of players, and even more of opponents, once the Buffs had departed, presented as their own memorial to the game in 1878.

It was a memorable match in more ways than one. It was the first time either side had won on the other's territory. It was the first time it had been thought necessary to have a neutral referee.

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Vassall, a member of the beaten England side, who later became honorary treasurer of the RFU.

reduced to 15 men a side: 10 forwards and five backs. The three-quarters and a full back, though Scotland seemed to have perplexed England, and Hornby, by playing three three-quarters from time to time.

The England side included a strong contingent from northern clubs: three from Manchester and one each from Swinton, Broughton, Halifax and Yorkshire Wanderers (the others came from the universities and the two senior clubs, Blackheath and Richmond).

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## Football

## Eight clubs in League Cup semi-final draw

The League Cup semi-final draw will go ahead as planned today, although none of the quarter-finals have been completed. Liverpool's match against Barnsley went ahead as scheduled but the goalless draw means a replay at Oakwell on Tuesday.

The other quarter-finals have all been rescheduled for Monday, but Ipswich Town and Watford have agreed to play their game on Saturday if their league matches are postponed. Ipswich are away to Sunderland and Watford home to Newcastle United and neither game is given much chance unless there is a dramatic improvement in the weather.

The number of league and cup postponements has now reached 285 and the total seems sure to pass 300 on Saturday, when the programme is in danger of being virtually wiped out for the fifth time this season.

John Toshack, Swansea City's manager, was disappointed yesterday when his request for a postponement of the first division match at Leeds on Saturday was rejected by the Football League management committee.

Mr Toshack had pointed out to the League that because of the adverse weather conditions in Wales his players had been unable to train for a week and the risk of injury was high.

Mr Toshack said that the League's decision was a disaster for his team. He said that the players were exhausted and that the team was not in good form.

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Sheffield Wednesday's manager, Jack Charlton, yesterday gave this advice to all his club's supporters: "Don't bother to watch us at Derby." Mr Charlton is aware that Derby County, due to meet Wednesday at the Baseball Ground on January 30, have raised their prices for visiting supporters. Derby is only 38 miles from Sheffield and the expected 7,000 Wednesday supporters are faced with a minimum entrance fee of £4 to see the match. Derby claim they have increased their prices for visiting supporters in an effort to keep out hooligans.

Plans by Rangers to beat the weather and play Tottenham Hotspur at White Hart Lane on Saturday have fallen flat. The Scottish League management committee will demand that the premier division club play their game on Saturday. Everything depends on Rangers away game against St Mirren, Dundee United and Spurs' home game with Middlesbrough, all of which are doubtful at the moment.

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## Golf

## Beautiful and bizarre in great California desert

From John Ballantine  
Palm Springs, Jan 13  
Golf as played here in the great California desert, in the Coachella Valley, is one of the most beautiful and bizarre, easy and difficult, frustrating but often rewarding. Perhaps the best way for Britons to the place is to imagine the scene laid out as a model.

Square green-matted coconut matting could represent the flat sand and the range of stark brown mountains against which the four golf courses of Indian Wells, Rancho Mirage, Desert Inn and La Quinta nestle like green linen handkerchiefs. A gentle fold or two in the latter could be the small, arid, occasional sand dunes in the surrounding desert; but it was still shirtless weather.

The courses are a few miles apart and every professional plays each of them in the four days of the tournament. The courses are a few miles apart and every professional plays each of them in the four days of the tournament.

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Cricket

# Butterfingers spoil England gamble

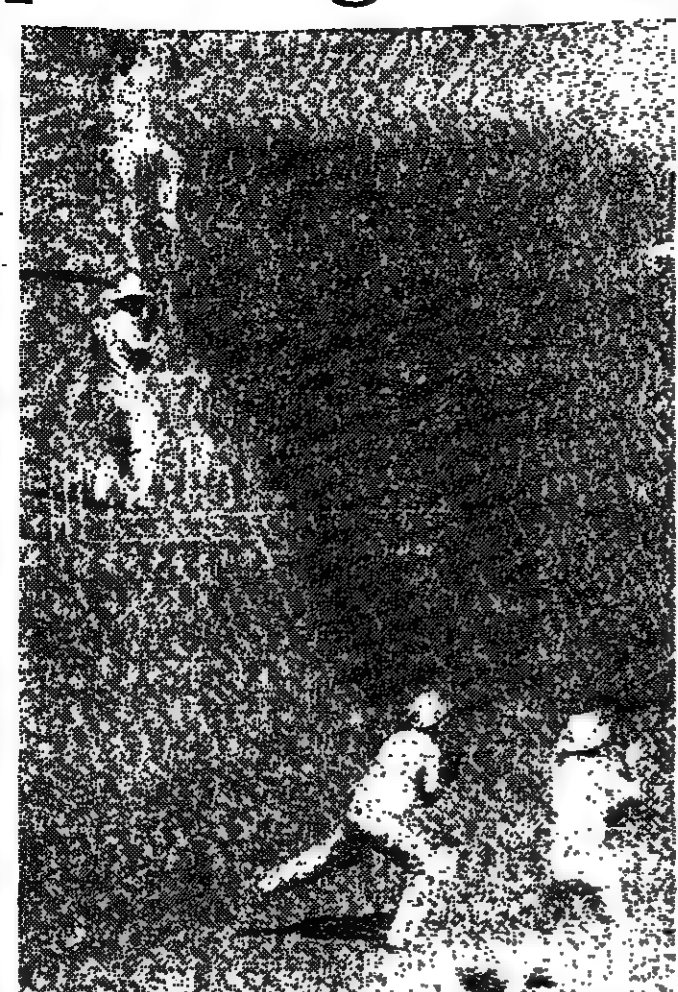
From Richard Streeton  
Madras, Jan 13

England boldly gave India first use of a lively wicket when the fifth Test match began here today, but two dropped catches by Vengarkar later, and a slip by the Indian captain, have given England the fillip they needed to win the match.

England's batting was not helped by the fact that the wicket was not as good as it seemed. The pitch was a little better than it looked, but the ball was not as true as it appeared. The result was a narrow victory for England.

There was always enough bounce in the greenish pitch to keep the bowlers interested and India's resolute batsmen were praised. Viswanath, who has so far been in three hours and a half, played through the final hour with faultless concentration as a further breakthrough.

Willie bowled with more fire and steel resolution than he has shown in the earlier Tests. Dilley began well but carried less than later and it was Allott who caused the Indians more trouble than anyone else.



Jubilation turns to anguish as Paul Allott sees Tavaré, one of England's finest slip fielders, drop a catch given by Gavaskar.

It has been one of the sadder aspects of this tour that Tavaré, probably the finest slip fielder in England, has been less than sure of himself in the field on this tour. England gained their first success in the 15th over when Tavaré, half forward, tried to withdraw his bat from a ball by Dilley and it brushed his glove on the way through to Taylor. Dilley in his follow-through carried on and jerked his thumb towards the pavilion in Roy's face, a boorish and unnecessary gesture.

## Racing

# Gaye Chance on favourable mark for Schweppes Trophy

By Michael Seely

The publication of the weights for the Schweppes Gold Trophy yesterday provided a welcome relief from the boredom of having no racing. In the Schweppes year of their sponsorship Schweppes have raised their contribution to this always competitive handicap to £21,000. For the first time in the history of the race there will be no penalties for subsequent winners and one again an authorial contest seems assured at Newbury on February 13.

Due to the festive gallop at which the race is run and the large number of competitors that take part, the Schweppes handicapper has to be very strict in his selection. In fact, only three horses have carried over 11st to victory. The last winner in 1965, Persimmon, was a 100lb weight. This year Sea Pigeon had been allotted a place with 12st 10lb, but the handicapper has decided to take a chance on him. He has dual champion hurdler, but not taken part since Celtic Ryde with 11st 13lb, the same weight as carried by Persian War in his record breaking victory. Peter Cundell has an open mind as to how the handicapper will treat him. "Quite frankly I don't see how the handicapper can have given us any less. Apart from some of the unknown quantities at the bottom we seem to be in a very good position. Celtic Ryde will run in the Quiley Hurdle at Kempton, the previous Saturday, before we reach a decision."

David Elsworth's Champion Hurdle hope, Neighlin, comes next in the handicap with 11st 12lb. However, Neighlin's trainer has said that he is not sure if he will run. Neighlin's trainer has said that he is not sure if he will run. Neighlin's trainer has said that he is not sure if he will run.

Of those at the foot of the handicap, Mr. Moonraker, Doug Price and Lumen are worthy of mention. Mr. Moonraker won the L'Oreal Handicap at Newbury with breathtaking ease and his trainer, Susan Morris, a barrister from Chard, is pleased with his form of 10st 2lb. "I never dream I'd have a horse good enough to run in the Schweppes. He's a horse who's been in the Schweppes. He's a horse who's been in the Schweppes. He's a horse who's been in the Schweppes."



Mercy Rimell: considers Gaye Chance reasonably treated

It is too early to consider compiling a short list, particularly as the plans for the several Irish riders are as yet unknown. But if my life depended on it, Gaye Chance must represent the best each-way value at the 16lb, which is generally on offer.

## Controversial wicket to be rebuilt

By Michael Seely

Melbourne, Jan 13. — The controversial wicket at the Melbourne Cricket Ground is to be completely reconstructed, a Victorian Cricket Association (VCA) official said today. The decision follows pressure from the VCA and criticism of the wicket by Greg Chappell, the Australian Test captain. Others who have criticised it include Lloyd, the West Indies captain.

The VCA secretary, Ken Jacobs, said that after talks between his association and the Melbourne Cricket Club, it was agreed that the centre wicket area at the ground would be totally rebuilt. Work would start in April and be completed by January 24. The project, to be carried out over two years, includes the installation of underground heating.

Mr. Jacobs said the VCA would not be involved in the reconstruction of the wicket. The decision to rebuild the wicket is the result of continued criticism over its unevenness and umpire spots. The wicket has been both complained that the wicket is dangerous. — Reuters.

## Alderman fights losing battle

By Michael Seely

Sydney, Jan 13. — The injured Australian fast bowler, Terry Alderman, is unlikely to be considered for the important match with Pakistan in the World Series Cup Sydney Cricket ground tomorrow. Alderman had an X-ray examination on his right foot today which did not reveal any break. He will have an orthopedic fitment made for his right boot and hopes to be fit for the game on Sunday in Brisbane against West Indies.

Australia still have a chance of making the final but will need to win the next three games (one against Pakistan, one against West Indies) to qualify. A final without Australia could cost the Australian Cricket Board between \$250,000 and \$350,000.

A crowd of just under 11,000 saw West Indies beat Pakistan by seven wickets at Sydney on Tuesday night. This compares with a record of 78,142 at Sunday's game between Australia and West Indies at Melbourne Cricket Ground. The first game of the final will be played in Melbourne on January 23 but it is unlikely to produce anything near that figure.



Alderman: his likely absence is good news for Pakistan.

Michael Holding, the West Indies fast bowler, today said he would have an under-pump knee surgery immediately after the third Test against Australia which begins in Adelaide on January 20. Holding has taken 77 runs in two one-day matches and two Tests despite the injury. Medical estimates say it reduces his bowling capacity to 80 per cent.

## Spectacular century by Miss Alderman

By Michael Seely

Auckland, Jan 13. — A fine century by Denise Alderman, sister of Terry Alderman, led Australia to victory by 138 runs over the provincial New Zealand team in the women's World Cup today. Miss Alderman's 117 included eight fours and took 130 minutes. Australia made 124 in 22.30. New Zealand made only 56 in reply. A much improved Indian side, after losing to England yesterday, had a comfortable victory by 10 runs in Auckland, their batting skills and quick running between wickets helping them to amass 262 runs for six wickets. Auckland made 262 in 22.30. New Zealand made only 56 in reply.

Middlesex have appointed Alan Wright as club secretary. Wright, 43, has been a Middlesex member since 1975. He will be leaving his job as passenger marketing manager for British Airways, where he has worked for 27 years.

Warwickshire's seam bowler Steve Perryman has joined Worcestershire in their second change of place between the two neighbouring counties this winter. Jim Cumbe recently moved in the opposite direction to Edgbaston. Perryman, aged 26, took 309 first-class wickets in Warwickshire, with a best-ever season haul of 73 when he was capped in 1977.

## Little hope for Ascot

By Michael Seely

Hopes for a resumption of racing on Saturday are bleak. Prospects are not much better in Ireland, where racing is scheduled at Navan for Saturday. There is still snow on the course and from the south-east winds will sweep in from the south.

At Ascot where the Lambart and Boller Steeplechase final was due to take place, the clerk of the course, Captain Nick Beaumont, said: "Unless there is a remarkable change in the weather, the situation for Saturday looks hopeless. The stewards will inspect the course at 11 am."

At Market Rasen the clerk of the course, John Lucas, said "It doesn't look too good" and at Newcastle there are snow drifts of up to four feet on the course and 16 degrees of frost. There has not been any racing north of Nottingham since December 7. Prospects are not much better in Ireland, where racing is scheduled at Navan for Saturday.

## Uncle Bing's Aintree aim

By Michael Seely

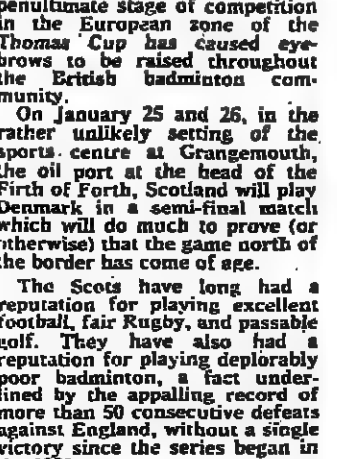
Uncle Bing, who won the Topham Trophy two years ago, has been entered for the Grand National and his trainer, Richard Head, believes he could be the first 13-year-old, since Sergeant Murphy in 1923, to lift the great race. Uncle Bing was getting near to race fitness before the freeze-up and Head's concern about the age of the horse was the only time before the National. "It's increasingly difficult to plan a comeback race, but his latest is definitely Liverpool," he said. His stable companion Border Incident is likely to run in Doncaster's Great Yorkshire Steeplechase in which he has been given 10st 10lb.

The conditions for another novice championship, sponsored by Jackson-Slopes and staff, are now being set. The conditions for another novice championship, sponsored by Jackson-Slopes and staff, are now being set. The conditions for another novice championship, sponsored by Jackson-Slopes and staff, are now being set.

As well as the Christmas-TM series, women riders have a second point-to-point championship, sponsored by Aldrich Wilson, the final of which takes place at Garmouth on May 22. In the South Midlands point-to-point area the champion, Frit, is again sponsoring three championships with a points system of scoring. The leading owner, leading lady rider and leading gentleman rider will each win a case of Taittinger champagne, and there will be bottles for those finishing second and third in each category. These prizes will be awarded at the final meeting of the area at Kingston on May 13.

## Scotland reap the rewards of Campbell's emphasis on the mental approach

# Thinking man's guide to better badminton



Campbell: the thinker

Scotland's arrival at the penultimate stage of competition in the European zone of the Thomas Cup has caused eyebrows to be raised throughout the British badminton community. On January 25 and 26, in the rather unlikely setting of the sports centre at Garmouth, the oil port at the head of the Firth of Forth, Scotland will play Denmark in a semi-final match which will do much to prove (or otherwise) that the game north of the border has come of age.



Campbell: the thinker

Two years ago the Scottish Badminton Union, understandably fed up with the situation, launched a five-year plan to increase interest and enthusiasm, and to raise the standard of play at all levels, but especially at the top.

Campbell's main hobby at school and university was music: he was a professional pianist and musician and played the violin and led the university orchestra. He hardly knew what a badminton racket was until his last year at school when he took up the game to get some exercise. Soon after he left university, however, he was asked to help to coach badminton in Scotland, especially in the north.

"First, the highly ranked player who has become accepted as the best in Scotland or in a district can suddenly be beaten. And the shock can be considerable. This can lead to a situation which the player finds difficult to control or even accept, which in turn leads to stress, poorer performances and still more stress."

"Second, the very young player who is beginning to make an impression at national level often feels he is playing for his coach or his parents and is afraid of letting them down by losing. This fear leads to a build-up of stress, which again affects performances and produces the very thing the youngster wanted to avoid."

Campbell believes there are six ways to help to reduce stress, better prepared for competition, and with uncluttered the deliberate introduction of elements such as noise, bad line calls and cheating during practice sessions; the use of physical relaxation techniques; stress management training; imagery or mental rehearsal; and, lastly, the use of one's ability rather than one's physical strength.

## Book review

# Companion for Sunday afternoons

By John Hennessy

Shi Sunday, as its title implies, is the book of the film, the television film with which the BBC has this winter provided a delicious sporting paradox. At a time when the country has been divided by almost unprecedented falls of snow and transformed into a winter wonderland for property equipped skiers, the television programme has had to cope with races abandoned because of too little snow, because of too much snow, because of a combination of snow, either lost in a fog or disintegrating under persistent rain.

Moreover, though, they have been able to assemble an informative and attractive programme, just as John Samuel, sports editor of the Sunday Express, has done in his book.

He has recruited a formidable team, not only of journalists but also of racers, among them Ken Reed, Canadian as skicler, and a heroine of yesterday in British colours, and Kenneth Baskett, a Samer himself, makes a number of telling contributions, as befits a man who is, arguably, one of the best skiers in the field in this country. Dave I suggest that his telling should extend to teaching the BBC reporters the facts of Alpine life.

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## Fishing

# Salmon leap but the rents stay low

By Conrad Voss Bark  
Fishing Correspondent

It would be a foolish man who would make any forecasts as to what the salmon season is likely to be this spring. It is too odd, to judge from the amount of snow on the hills, that it could be a better than last year. For the moment, however, it can only be said that it might well say it could hardly be better, but let that pass.

One encouraging sign is that from the reports so far, and in spite of double-figure inflation, rents of the best beats are held reasonably low. Struth and Parker have the opening four weeks of the season to let on the Easter Elchies beat, the best on the Tweed, for £175, both figures including VAT.

Tenants stay at the Gordon Arms Hotel at Forth, which has been let for the season, including VAT, for £1,500.

A Sutherland estate river, the Donard, made £300,000 plus for size and a half miles, including 4,000 acres of hill ground and a lodge, which Savills work out at approximately £500 per acre and £1,500 per salmon.

No cross-country  
Warsaw, Jan 13. — The Polish Athletic Association have decided not to hold the 1982 cross-country championships, scheduled for March 21 in Warsaw, the Polish news agency PAP reported today. — Reuters.

مكتبة من الاصل



## John Woodcock's Letter from Australia

### Rivalries in the market place

Sydney, Jan 13

When the Wallabies rugby union team returned to Australia today after their tour of the British Isles they faced a barrage of questions aimed at uncovering the division which had been reported to have existed between the Queenslanders in the party and those from New South Wales. Needless to say, their ranks were closed. In many ways, though, inter-state rivalries are as essential a part of life in Australia as those in England between the red rose and the white.

Whether this manifested itself during the Wallabies tour and undermined their play, I have no idea. What may be of some general interest in England is the battle that is forever being fought in Australia for the footballing market.

In Victoria the game of Australian Rules, a spectacular exercise in kicking and marking, dwarfs all else. It resembles Gaelic football more than any of the other codes, probably because of the Irish influence that was prevalent in the goldmining areas of Victoria in the middle of the last century.

The two high days of the Australian sporting calendar, unless a Test series against England or West Indies is reaching an exciting climax — are the last Saturday in September which is set aside for the Grand Final of the Victorian Football League played, like the FA cup final, before 80,000 people on the Melbourne cricket ground and the first Tuesday in November when the Melbourne Cup is run.

In Western Australia, South Australia and Tasmania, where Rugby Union twenty play Australian Rules. Of Rugby League, in these same four states, there is virtually none more than in Cornwall or Kent.

New South Wales is the chief stronghold of Rugby League and Queensland of Rugby Union. Just as in Melbourne the sports press are taken over during the football season by Australian Rules. In Sydney the headlines are made by Rugby League and in Brisbane by Rugby Union.

Considering how little Rugby Union is played in the country, it seems remarkable that Australia can give the All Blacks such a good time. As it is, it is not as if they are alone beat them, and come as near as they did to carrying off the Grand Slam in Britain. All they needed, as I have said, was someone to kick them some goals.

The game I have not mentioned, but whose spread is as inevitable as in most other countries of the world, is soccer, under the immigrant influence, which until recently has been mainly European; soccer, even in Australia, is now played, or played at, more extensively than any of the other types of football.

Parents, deterred by sports in which body contact plays a larger part, are coming round to favouring Association Football. In the cities, only a lack of grounds is preventing it from taking a more rapid hold. For



An Antipodean version of Gaelic football, Australian Rules, is a spectacular and often violent game. This vociferous player makes the use of his lanky opponent's shoulder to reach for the ball.

Members of the VFL, to play their home matches in the coming season, beginning in March on the Sydney cricket ground.

It is a move that has met with strong resistance, not only from the older members of South Melbourne, but from the devotees of Rugby League and Rugby Union in Sydney. If it is to be the same thing may be tried on the Woolloomooloo Ground where the Tests are played in Brisbane.

The purpose is threefold, to spread the gospel of Australian Rules, resist the advancing tide of soccer and improve South Melbourne's financial position. It is hoped that there may eventually be enough expatriate Victorians living in Sydney — and one day in Brisbane — to start clubs of their own. As for the members of South Melbourne they will be able to watch their "home"

matches, to be played on Sundays, on television.

Among the players of team games, the best paid in Australia are the top cricketers, who, while they keep their place in the Test side, may earn £50,000 a year, and probably more. From the testimonial which he is now having, Dennis Lillee is expected to collect £250,000.

Australian Rules footballers — a dozen or so of them in Melbourne — come next with around £30,000, and they mostly have other jobs as well. Rugby League would follow them, much of the revenue here coming from the phenomenal popularity of poker machines.

Of the Wallabies who landed in Sydney this morning, some will soon be induced to switch to Rugby League, a denuding of the ranks which happens annually, and makes Australia's success in the rugby union world all the more commendable.

And the liability of the carrier to the small amount in the old Rules was also null and void.

The importance of maintaining freedom of contract had been urged. But there was a higher public policy to be considered — the public policy which demanded that in international trade all goods carried by sea should be subject to uniform rules governing the rights and liabilities, and the limitation of liability, of the parties. They should not vary according to the particular country or place where the dispute was tried.

Class 2 of the bill of lading was null and void in proceedings in the United Kingdom courts. The action should not be stayed but proceed with the limit of liability prescribed by the Hague-Visby Rules.

The appeal should be allowed.

LORD JUSTICE SHAW, agreeing, said that the uniform application of the Hague-Visby Rules adopted by the 1971 Act would meet many international commercial requirements for uniformity of the rights and liabilities of parties to mercantile transactions involving carriage of goods by sea. Contracting out, either direct or indirect, was inhibited by the objectives as well as by the terms of the Act and the protocol.

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## Today's television and radio programmes

Edited by Peter Davalle

## BBC 1

**9.05 For Schools, Colleges:** Today's subjects are Living in a Developing Country. It's Your Choice. It's Maths. Science Workshop. Scene, Near and Far. Search (Down the River) and On the Rocks. There's an interval at 12.20. At 12.30, News After Noon: with Moira Stuart and Jeremy Thompson. 12.57 Financial report and news headlines. 1.00 Pebbles. 1.10 At One: Music and chat. And it goes out "live". 1.45 King Rollo: for the very young. 1.50 Stop — Got The Testing of a new car. 2.00 You and Me: another one for the very young. 2.15 For Schools, Colleges: Music Time and Television Club (A School in Time: Schoolchild). 3.55 Play School. (see BBC 2, 11.00am)

**4.20 Laurel and Hardy:** cartoon. 4.25 Jackanory: Rodney Bengey reads part four of Ursula Moray Williams's *Jeffy, the Burglar's Cat*. 4.40 Nucleberry Finn and His Friends: Episode 2 of the Mark Twain story. 5.05 Newsround: with Paul McDowell. 5.10 Blue Peter: The story of Jane Austen and her secret. The presenter is Sarah Brown. 5.40 News: with Linda Alexander. 6.00 Regional news magazines. And at 6.25, Nationwide. 7.00 Tomorrow's World: Tonight's edition features: the first floating fish farm; an expensive piece of hi-fi equipment which can control faulty records; a new way of making milk products from powder which can increase the life of a cream bun by six months. And another reason why smoking mothers-to-be may be harming their offspring.

**7.25 Top of the Pops:** with Dave Travis. 8.00 Wildlife on One: The Great Hedgehog Mystery. An A to Z of the spiny ones, including 5 for Sex. 8.30 Seconds Out: Boxing world comedy. The champion is bound for Paris, but round one is at the airport.

**9.00 News:** with John Simpson. And weather forecast.

**9.25 Stoneying:** The Teddy Bear's Nightmare. Another in this drama series starring Trevor Eve as the radio station private eye. Why is the owner of a foot handbag so reluctant to claim it? Also starring Michael Medwin as the station boss, David King and Charlotte Cornwell (4).

**10.20 Question Time:** Robin Day and his panel of experts face questions starting from London's Greenwood Theatre. Tonight, the panelists are Neil Kinnock, Opposition spokesman on education; Shirley Williams, former Secretary of State for Education; John Thorn, headmaster of Winchester College; and Marian Roe, a Greater London Council member.

**11.20 Kojak:** A full-scale murder hunt is launched for the killer of a police patrolman.

**12.10 Weather forecast:** Closedown at 12.15.

## BBC 2

**11.00 Play School:** The Story of a River, with music adapted from Smetana. Presented by Chloe Ashcroft and Fred Harris (also on BBC 1, 3.55). 12.00 Open University: Today's subjects are: The Pre-School Child (GIVE and TAKE); 12.25 Childhood (10); Out to Play; 12.40 Home Sweet Home. Open University programmes and at 1.15, Intermission follows. 3.55 Robson's Travels: Another chance to see this series of films in which the TV and radio personality Robert Robson goes journeying through India. Today: Calcutta to Mirzapur. His eventual destination is Simla (first shown on BBC 1).

**4.45 Muggidge:** Ancient and Modern Second screening of this eight-part autobiographical series in which Malcolm Muggidge, with the help of archive film, surveys his multifaceted life. Today: his education and a teaching post in India (4).

**5.40 All Creatures Great and Small:** More pages from the lives of country vets. Today: an emergency operation on a workman's dog. With Robert Hardy, Christopher Timothy (4).

**6.30 Ennals' Point:** Episode 2 of the serial about Welsh life. A local doctor goes fishing and lands himself in trouble.

**7.18 Cartoons:** M. Point. From Canada; 7.30 News summary.

**7.35 History on Your Doorstep:** First in a new series (see Choice). 8.00 Nothing Without Work: Work, leisure and community life of the people of Govan, on the edge of Glasgow. It's the story of a fight for survival.

**9.00 The Nolans:** Songs from Bernadette, Maureen, Linda and Colleen. They include God Knows, Attention to Me, and Fame. There's another Nolan concert next week.

**9.30 Forty Minutes:** The Great Cover-up. Documentary about the expense, pain and disappointment that some men have to put up with when they decide to have something done about the fact that they have more skin than hair on the top of their head. Made by John Percival, who knows what it means to be bald. Will be the last of the series.

**10.10 International Darts:** The quarter-finals of the Embassy World Professional Championship, from Jolene Club in Stoke-on-Trent. The semi-finals begin tomorrow.

**10.45 Newsnight:** news and comment.

**11.30 International Darts:** Back to Stoke-on-Trent. Ends at 12.15.

## ITV LONDON

**9.30 For Schools:** Subjects include My World (dramy men), Sealing and Doing (Roman Britain), Geography (valley glaciers) and Over to You (dramy men). 12.00 Little Blue: baby elephant story. 12.10 Get up and Go! with Beryl Reid. 12.30 The Sullivan: Grace's birthday dinner. 1.00 News from ITN. 1.20 Thames news headlines. 1.30 Take the High Road: Scottish estate serial. Enter a stranger: 2.00 After Noon Plus: with Judith Chalmers. Trevor Hyatt: Judith looks at the beauty business and seeks to know the secret of it all a great confidence trick? 2.45 Love Among the Artists: Episode 2: Shaw's novel serialised by Stuart Latham. The teacher (John Stride) clashes with Mr Brailford (John Hordley) once again. Also starring Geraldine James, Judy Campbell (4).

**3.45 Three Little Words:** word association game. With Ray Allan.

**4.15 Dangerous:** cartoon. 4.20 Little House on the Prairie: MacGregor seeks another "daughter".

**5.15 Emerald farm:** Yorkshire country folk serial.

**5.45 News from ITN:** 6.00 Thames area news.

**6.30 Thames Sport:** The local scene surveyed.

**7.00 Does The Team Think?** TV version of the old radio question-and-answer comedy show. With Beryl Reid, Jimmy Edwards, Frankie Howard, William Rushton and Tim Brooke-Taylor (4). The questions are put to the panel by members of the public. And, each week, there will be a different guest, personally joining the questions. This is the first of this new series.

**7.30 The Way We Were (1973):** Romantic drama about the on-and-off relationship between a politically active wife (Barbra Streisand) and a non-political writer (Robert Redford). With Marvin Hamlisch's much-loved music. Co-starring Bradford Dillman.

**9.00 Film: The Way We Were (continued).** 9.30 TV Eye: Challenging the Russians. Nick Downie's filmed report which he shot behind the Soviet lines in Afghanistan. Guided in darkness, by Afghan guerrillas, he made his way through the city of Kandahar to the central area held by the insurgents. He filmed the street-by-street fighting between government forces and the guerrillas. Downie took two months to film his report.

**10.00 News:** And Thames area news.

**10.30 Sengler UXB:** Dead Man's Shoes. Repeat of this superb story about a bomb disposal squad in wartime Britain, and starring Anthony (Bridgeshead Revisited) Andrews. This episode, the first of 13, has Andrews, a Royal Engineers officer, being posted to a bomb disposal company. It is 1942 and London is daily having to face the horror of these appalling weapons of destruction. (4).

**11.30 Enterprise:** Profile of Robert Sengler, said to be the world's number one horse dealer, and his team who have become known as Sengler's riders because of the way they succeed on horse actions (4).

**12.00 What the Papers Say:** Andrew Alexander, political writer on the Daily Mail.

**12.15 Close-Up:** With Glynis Spiller.

## Radio 4

**6.00 News Briefing.** 6.10 Farming Today. 6.20 Today. 6.45 The Window by George Simonson (4). 9.00 News. 9.05 E. Mahan Me Laugh. Les Cowson returns to some entertainers that make him laugh. 9.30 The Living World. 10.00 News. 10.05 Two Lives. A look at the lives of David Wigg, MP and his wife as they try to give their two healthy children a normal upbringing, while their two other children are dying from a hereditary disease. 10.30 Daily Service. 10.45 Monday Story. "A Five-Set Match" by Donald Brevett.

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**11.55 BBC Scottish Symphony Orchestra:** Concert. Susan







THE TIMES

# Guide to Information Technology

This report is published to mark the start of IT 82, a £1.2m year-long campaign by Government and industry, to create public awareness and overcome suspicions of the "information revolution".

What exactly is information technology? It is considered important enough to command the services of a Government minister, and yet in a recent MORI poll 80 per cent of those interviewed had never heard of it.

The minister in question, Mr Kenneth Baker hopes for a different state of affairs at the end of this, Information Technology Year.

The officials responsible for promoting IT see their mission in very broad terms. According to the press release introducing IT Year 82, information technology is "the use of computers, micro-electronics and telecommunications to help us produce, store, obtain and send information in the form of pictures, words or numbers, more reliably, quickly and economically." That definition encompasses telephones, satellites, industrial robots, television, even electronic Space Invaders games.

The Year is a purely national campaign — not to be confused with international efforts like the Year of the Disabled. Armed with £1.2m contributed equally by government and industry, the organizers are trying to incite the British people and British companies to join what the chairman of IT 82 Alan Benjamin, called the world-wide Information Revolution.

The country which led the Industrial Revolution two centuries ago cannot hope to outperform the rest of the world again. But we must avoid falling hopelessly behind the leaders, now the United States and Japan. If we make no effort, Britain's relationship with the information-rich countries of the twenty-first century will be rather like, say, Mexico's relationship with Britain after the Industrial Revolution.

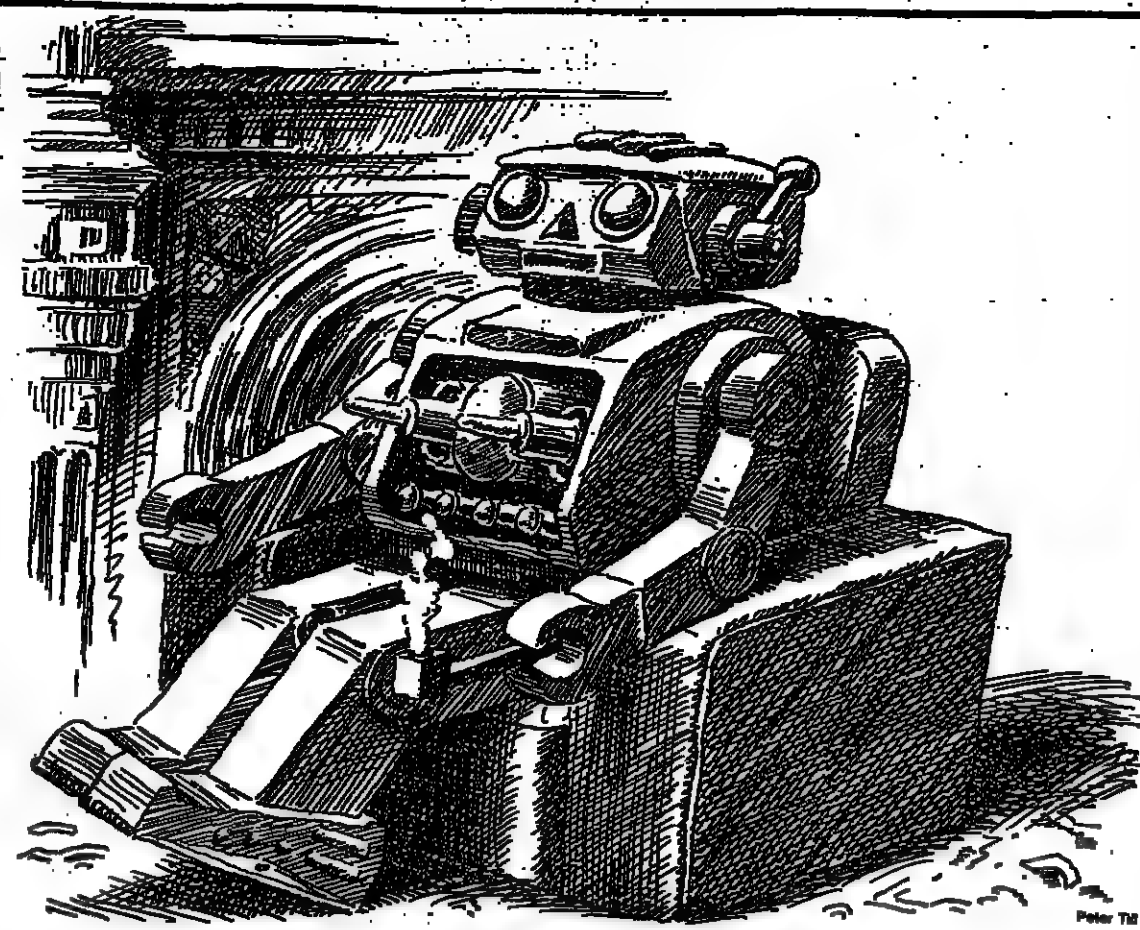
In theory IT 82 is aimed equally at the general public and at industry. The public campaign will attempt to convey the excitement of information technology in the home, at work and elsewhere: schools, colleges, shops, banks, libraries, hospitals. The tone will be reassuring rather than revolutionary, soothing not strident: the idea is to persuade the deeply conservative British people that the familiar landmarks of life will be improved not swept away.

However, it is clear that unofficially the Government regards the industrial campaign as far more important. Alan Benjamin says the approach to companies will be "much sharper, saying 'get with it, you're behind. It's a much harder message of encouragement to industry'."

Many of those involved in IT 82 see this year as a last chance for British industry to keep up with the world leaders. And they do not just mean the IT business itself — computer, electronics and communications companies — but tens of thousands of poorly managed firms making products or offering services that have nothing to do with information, from furniture to food. Almost all of them could improve their processes by installing a microcomputer to store data and process accounts, or a Prestel terminal to gain access to other people's databases, or a computer-aided design or manufacturing system, or even a full-scale robot.

"For industry IT 82 is almost a once-and-for-all opportunity to get its act together," says David Fairburn, director of the National Computing Centre.

When I asked Mr Baker what particularly excited him about IT, he replied in indus-



trial-economic terms. "The most exciting thing is that it is the coordinating technology for a whole series of activities which are the fastest growing economic activities in our society," he said. "IT is now at the centre of huge converging flows of investment. Computing and telecommunications are converging very rapidly, and in association with them is the whole of the entertainment industry."

Alan Benjamin answered the same question quite differently. "The prime excitement is in the area of social systems," he said, giving as an example the old age pensioner who will be able to sit in front of his home information terminal in a few years time and ask it to explain in clear simple terms how social security and tax legislation will affect his personal finances.

Until now the effect of the so-called information explosion has been to overwhelm people with far more information than they can handle. The means of sorting what you need or want out of the constant barrage of words, numbers and pictures have been hopelessly primitive and inadequate.

The result is that today people make crucial decisions on the basis of far too little information. The combination of communications and computing power represented by IT will feed each of us with the data and interpretation we really require. Then we will be able to devote all our energy to the information itself, rather than the search for it.

Computers are starting to become more "intelligent" and "friendly", as the jargon goes. Designers are beginning to make them think and

respond more like humans. Before the end of this century the Japanese are likely to introduce computers with which people can have a normal spoken conversation. Armed with sophisticated voice recognition and synthesis, and programmed to respond to the subtle nuances of human speech, the IT terminal will be able to comprehend and answer a command like this:

"I've got a meeting in the centre of Leicester at 10 tomorrow morning. That will probably go on for two hours — but better allow three just in case. Then I want to go on up to Nottingham to visit our branch there during the afternoon, and afterwards I need to get to Derby in time for an early supper with my brother and his family. He can meet me at the station any time after 5.30 — no, wait, I think he said 6.30. Give me a print-

out of all the trains I will need tomorrow."

Mr Benjamin believes that homes of the 21st century will have three separate IT systems, for entertainment, communications and environmental control. Technically there is no reason why they should not be combined into one — and indeed the information may come into the house in a single cable — but he says: "I don't think people want to confuse entertainment with communications."

The entertainment system will provide a huge variety of films, music and TV programmes, including "interactive" facilities like a far more sophisticated version of today's phone-ins. The communications terminal(s) will include the (video?) telephone and a means of access to many computerized databases, such as the travel expert we wanted to ask about trains to the Midlands. The environmental systems will control the home's heating, in response to outside weather conditions, so as to minimize energy consumption.

Most of the system's hardware will probably be imported, mainly from Japan. But the software — the programmes that make it operate — may still be produced in Britain. Although some observers believe Britain's "genius" for software — much quoted in the computer-electronic press — may be swept aside by the efforts the Japanese are making in this area too, most of those involved in IT82 believe that we can hold on to our lead in software and computer applications.

However, Mr Baker warns against counting Britain out of the hardware market too soon. After all, he points out, we are currently turning out more computers than the United States or Japan. In terms of volume, though not of course value, Clive Sinclair's ZX81 is the best selling computer in the history of the world.

Clive Cookson

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- Page 3 A historical anatomy of computers, telecommunications and electronics
- Page 4 An A-Z of Information Technology explains some of the confusing jargon of the industry and some of the milestones of discoveries and inventions that gave birth to IT
- Page 5 A-Z continued and some of the pitfalls of choosing a personal computer
- What are the fears, opposition and attitudes to IT?
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IT is already affecting all our lives in some way. The next pages look at developments in:

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## Every busy director deserves a personal assistant.

"But I've already got one...my secretary," you may be saying.

True, but does she have the time to give you all the help you need?

Many secretaries are so bogged down with day-to-day correspondence, reports, minutes and so on they just don't have the time to be personal assistants as well.

We don't think a person in your position

should have to worry about these problems.

So we've come up with the answer.

The new Bitsy Secretaire.

This is a specially developed

word processor which can speed up all routine 'chores' quite dramatically, so your secretary will have plenty of time to give you all the help you need.

With a minimum of training she can produce letters, reports, minutes with much less effort.

And like our other systems, we've designed the Bitsy Secretaire with the secretary in mind.

It's simple to learn, has easy control instructions, even a special screen with brightness control that tilts so your secretary can adjust it to suit herself.

So don't let your work get on top of you.

The Bitsy Secretaire will give your secretary the time to be your personal assistant. After all...you deserve a helping hand.



PLEASE SEND ME FURTHER DETAILS ON THE BITSY SECRETAIRE.

NAME \_\_\_\_\_ POSITION \_\_\_\_\_ COMPANY \_\_\_\_\_

TYPE OF BUSINESS \_\_\_\_\_ ADDRESS \_\_\_\_\_

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INFORMATION SYSTEMS



# Looking for low-cost resilience? You don't need a list. A word will do. MOMENTUM!

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From CTL.  
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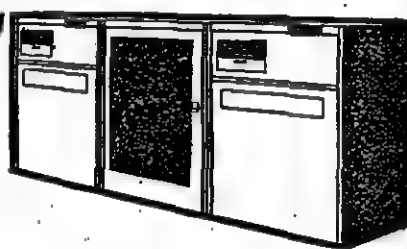
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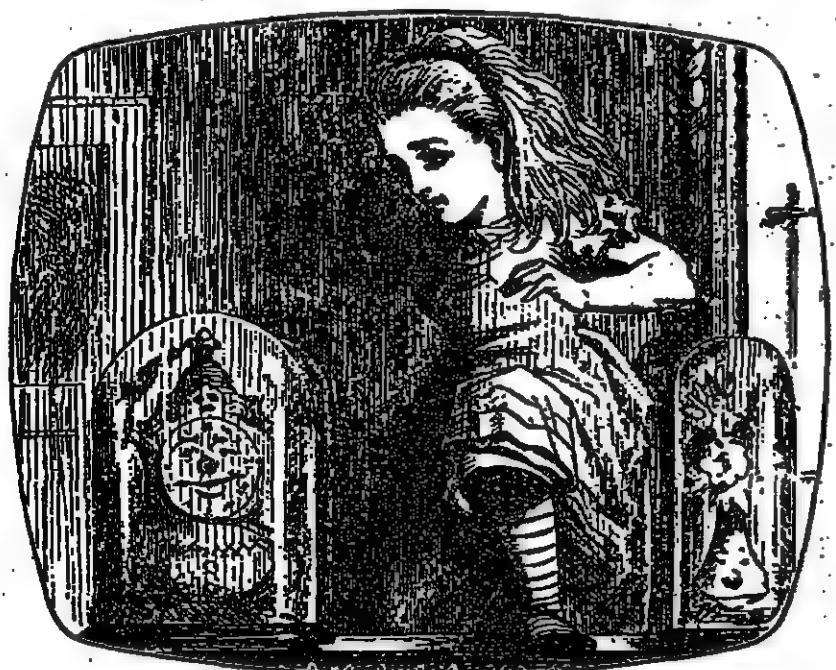
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information, disseminated at an ever faster rate.

Conventional metallic conductors can never rise to the challenge. So, to establish wider bandwidth communication links, British Telecom have turned to optical cables, pioneered, developed and installed by BICC.

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Following an extensive R & D programme, BICC is one of the world leaders in optical technology, with a host of major firsts to its credit:

- first optical TV distribution cable, carrying BBC-1 and ITV pictures to 36,000 viewers in the Hastings area;
- first commercial optical cable communications system to go into Europe's public service network;
- first UK operating optical cable link along 25 kV ac electrified track, complying fully with International Telecommunications Standards.

The continuing importance of BICC's involvement in optical cable transmission is underlined by the recent contract to supply the longest optical cable system in the UK – a 201 km link between London and Birmingham.

As to our resources, these include a dedicated factory at Blackley for the manufacture of optical cables for telecommunications applications, and, for short haul optical cables, a new manufacturing facility at Helsby.



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## INFORMATION TECHNOLOGY

The state of British information technology is outlined below by David Hewson. On the facing page Pearce Wright discusses the global background to computers, satellites and electronics

## Worm's eye view of market

There are plenty of official figures outlining the way in which Britain has fallen badly behind in the rapidly-growing specialization of information technology. But perhaps the most effective demonstration of this fact can be had by visiting one of the many centres now selling the software of the communications revolution, everything from CB radios to home computers. Prestel television converters to serials for receiving satellite television.

One is unlikely to find more than a handful of British-made products anywhere on view. This may not be a precise metaphor – such shops cater largely for home use or small businesses – but its experience is equally applicable to the larger and more wealthy world outside, the vast office systems of the near future, with their electronic mail systems, computerized telephone switchboards, and conferencing facilities linked by television.

Britain's total trade deficit in information technology in 1980 was £300m. The figure is unlikely to be much changed today, and could have been worse were it not for the effects of the recession. And despite the efforts of both government and industry over many years, British manufacturers are no nearer possessing a significant world presence in the exports market.

The most startling area of domestic failure is in the area of computers and peripherals. In 1979, 83 per cent of a total market of £1,241m went to foreign manufacturers. Two years ago, the sector employed 49,000 people in Britain. Today the recession and redundancies, notably at the state-backed flagship ICL, are thought to have reduced the workforce significantly.

This poor showing is not simply worrying in terms of the domestic balance of trade. At constant 1980 prices, the worldwide information technology market is expected to grow at the rate of 14 per cent from 1980 to 1985, rising in value from £54,400m to £104,700m. During the same period, according to a report prepared by the consultants FA Computers and Telecommunications (Pactel) for the then National Enterprise Board, Britain's share of the world market can only be expected to remain at 5 per cent.

Pactel succinctly summed up the British problem thus: "Based on estimated 1979 turnover, about half of the world's top 50 IT companies are American-owned, nine are Japanese and Britain is in third place with six companies (including Rank-Xerox).

One historical problem which has faced British companies in the field has been its high risk nature. This situation places on the state a large part of the responsibility for leading the sector forward, whether through such bodies as the National Enterprise Board (now renamed the British Technology Group after its recent merger with the National Research Development Corporation) or through procurement schemes which guarantee home markets for new developments.

which is 51 per cent American.

Apart from Rank-Xerox, the British-owned companies are GEC, ICL, Plessey, Thorn-EMI and Racal Decca. None of these companies has the world scale or breadth of commitment to IT of leading American or Japanese companies, or indeed of European competitors such as Siemens or Philips. Furthermore there is a scarcity of dynamic small and medium-size high growth companies in the British IT industry, one marked exception being Racal.

About half of British IT production is from companies which are foreign-owned, usually by American interests, and the domestic industry is, Pactel concludes, weakest in the highest growth areas such as small business computers and word processing, and strongest in the traditional markets such as defence and public telecommunications equipment.

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British Telecom's Prestel videotext system is one of the few areas where a British product has consistently led the field.

Its system of putting information through television sets aroused a heartening amount of foreign interest, even though it is in the early stage of development. British Telecom is working on several advances, including a machine codenamed 'Albert', which is due to be launched later this year will combine videotext, telex, word processing and telephone functions.

The future for this sector lies in the eventual development of complete home information systems, a prospect which is already exercising media organizations both in print and in entertainment. British Telecom will also unveil its Gateway system this year.

This seems to be one area in which Britain does not face an already established lead by competing nations. The future of System X, the computerized switchboard system developed by British Telecom, is unlikely to involve such export potential. Some £2,500m will be spent between now and 1985 installing System X telephone exchanges.

But the difficulty for the system is that it has been developed in the context of a state monopoly.

Mr Tony Davies, a member of the Department of Industry's information technology panel, is highly critical of British Telecom's record.

"There isn't a hope in hell of people in Britain who supply British Telecom winning any significant export business," he said recently. "British Telecom is so far behind in accepting new technology that the products it has developed – System X for example – are far behind what a free private sector could have supplied and they will become quite incapable of standing up in export markets."

These fears are not felt to be deeply elsewhere. Mr Joseph N. Pelton, who is on the staff of the International Telecommunications Satellite Organization (Intelsat) forecast in his new book *Global Talk* that Prestel, System X and computer and electronic business terminal ventures from Racal and ICL were just a few of the promising British IT projects for the 1980s.

For the immediate future, Britain can expect to benefit from the growing interest in business and television satellites through British Aerospace's involvement in the European Space Agency satellite. There are also encouraging signs in the services industry, which is growing at a moderate rate.

How far Information Technology Year will enable Britain to turn these modest benefits into a real "catching up in the world high technology race" remains to be seen. Certainly the stakes are high. Pactel gloomily predicts that, if current trends continue, we will face a trade deficit in IT of £1,000m by 1990.

# 1982 is INFORMATION TECHNOLOGY YEAR

and the biggest event is

## INFO The Barbican London 9-12 February

INFO 82, Europe's leading office automation show, opens on February 9th at London's newest exhibition centre. No other exhibition gives such a complete picture of the electronic office of the future.

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# Milestones in a cheap and quiet evolution that will bring a consumer revolution

## Computers

There are almost as many definitions of information technology as there are experts on the subject. So the evolutionary chart on page IV depicts some of the main developments from which information technology was born.

This scheme of outlining the origins of the industry was prompted by an observation by Mr Alex d'Agapeyeff, the founder of the first British software firm more than 20 years ago, and managing director of Consultants in Information Technology. For he draws a distinction between "the old form of computing and the new information technology which has come with advances in the silicon micro-circuit".

The present wave of information technology flows from the marriage of micro-electronics, telecommunications and computer programming. This merger has transformed computing into data processing from an expensive and specialized activity into a cheap consumer market.

In particular it has produced the personal computer; micro-electronic packages to enable telephone and television sets to be plugged into computer information networks; and cheap and powerful electronics units for improving the large and medium-scale computer systems that reside at the centre of big industrial, commercial and governmental organizations.

In addition, the micro-computer has turned the idea of using semi-intelligent robots for manufacturing into reality. One result of that development is seen in the devastation of certain European industries by Japanese enterprise. And it is this innovation which is causing most anxiety among specialists in Britain like Alex d'Agapeyeff. He says it is no accident that the Japanese came from behind to lead in the volume production of micro-circuitry.

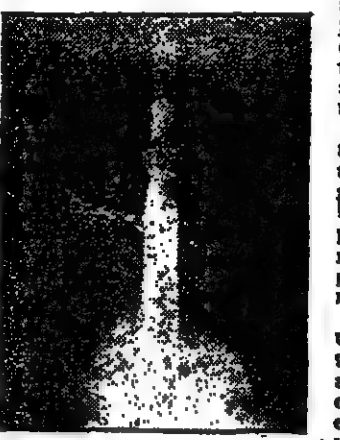
Confirmation of their success, if it is needed, is shown clearly in the analysis of the world's 50 top information technology companies listed in the chart prepared by the Factel organization in a recent survey. Not one of the

Japanese firms would have been included in a similar league table produced 20 years ago.

The electronic computer era was ushered in by 1946 with the invention by Dr J Presper Eckert and Dr John Mauchly with their machine ENIAC (electronic numerical integrator and calculator) at the University of Pennsylvania.

However, the first invention was one of several projects in the United States and Europe supported from defence research money for developing new types of powerful machines to help with complex weapons calculations and for deciphering codes.

Nevertheless there was considerable competition between the design teams in the early days. And a counter-claim exists that a machine called Colossus, built in Britain, was the first electronic computer.



However, there are more important claims for at least two machines completed in 1948 to be the real forerunners of the modern electronic computer. One of them labelled SSRC, built in IBM's laboratories, and the other known as the Manchester University Mark 1 had the programmes of instructions stored internally.

Many major technical advances were needed to make possible the transfer of computers from the university and military laboratories to commerce and industry.

The first electronic computer built for sale, based on the Manchester University Mark 1, was delivered by the Ferranti company in February 1951. It had 4,000 electronic valves packed into racks in a battery of air-conditioned

cabinets which filled a large room.

The life of the first generation of computers was short because of their size, cost, unreliability, limited storage for information and huge power consumption. But the invention which consigned them quickly to the museum was the transistor.

That innovation was the most important among many other crucial discoveries in hardware and software responsible for increasing the number of large and medium-scale computers in use in the world from 6,000 20 years ago to nearly 250,000 today.

But by 1960 development engineers had devised the beginnings of the processes, using photolithography for etching several transistors and other components on to a piece of silicon the size of a postage stamp. That birth of the integrated circuit soon brought a new generation of small, desk-sized mini-computers; and the larger models of computers also entered a third generation of higher speed machines.

Then came the major technical leap into miniaturization with large-scale integrated circuits, crowding hundreds of electronic components on one silicon chip, making possible the micro-processor and then the micro-computer.

Yet the same principles underlie the plodding computation of the first computers and the microsecond speeds of the current range of electronic miniatures, all of which need five basic sections.

The input section translates information from a variety of devices into a code that the computer understands. In the early designs there were only punched paper tape and punched card inputs. Now there are the familiar keyboard — and — TV units; magnetic tapes, discs and drums; optical scanners reading the magnetic code on cheques or the digital code on goods at the cash desk of a shop.

The memory section does what its name says. It stores information until it is needed by other parts of the machine. The most successful memory in modern computers for nearly 20 years has been the magnetic core variety, consisting of thousands of tiny iron beads. Each tiny iron core is at an intersection of two hair-thin

wires forming part of a rectangular grid. These core memories are being replaced by cheaper, smaller and higher capacity semiconductor memories on chip. In addition to these main memories built into the computer, auxiliary memories in the form of magnetic tapes and discs provide the low-cost, very high capacity needed for bulk storage of information.

The handling, directing and processing of the flood of information passing through a computer is done by its arithmetic and logic units. It is here that the complex calculations are done if the machine is programmed for largely scientific and engineering purposes, and the data is manipulated in commercial and administrative applications.

The part which regulates the memory and the arithmetic section is the control section. It regulates the flow of information between them and interprets the instructions programmed into the memory, and accordingly, dispatches data once it has been processed to the output section. But the output can go to an almost endless variety of devices. The presentation of words and numbers on a television display of high-speed printer is the most widely known type. Whereas the actions of robots on a car assembly line are one form of output for the computer's electrical impulses; so are the commands to an aircraft's steering mechanisms from an autopilot, or artificial voice commands or the directions to another computer.

Nineteen-sixty was the turning point for a lot of key developments, and that year the *Association of Computing Machinery* had the following to say about one important emerging subject: "A common business-oriented language, called Cobol, for use in writing instructions on business-type problems for any electronic digital computer, may soon be available. Cobol, which is written in English and independent of any make of model of computer, was presented in the final report to the Conference of Data Systems Languages."

The purpose of a programming language is to make the writing of programmes cheaper and easier. By definition that means more reliability, because an im-

mense amount of the cost of introducing computer systems is still in the correction of errors. In the early 1960s the production rate for a programmer writing the programme for a business application was about £2 per finished line of machine instruction. A business application requiring, typically, 20,000 lines of instruction code therefore cost £40,000, and more than likely employed four or five people for 18 months to two years.

That level of productivity would be completely unacceptable today. Improvements have been made in automating the design and checking of programming systems. As a result there is a large number of advanced computer languages such as Fortran, Cobol, Basic, PL-1, and hundreds of software packages for particular applications for personal computer users or businessmen to buy off the shelf.

But the great skill remains in designing the original programmes. The methods to make that easier have reduced the costs nearer to 20 pence a line of code.

## Satellites

The merger of computers, micro-electronics and telecommunications has created a single information industry so sprawling it almost defies description. Telecommunications can be regarded as the elder statesman of the three technologies because it pervaded almost all corners of the globe with electro-mechanical telephones and undersea cables long before electronic components and then computers were invented.

But the application of computers and micro-electronics to telecommunications has changed completely the design of the telephone handset and the office switchboard. Computer systems in particular, with their ability to store and control the organization of information, are adding a new dimension to the processes used for the distribution of television, mail, facsimile, telephone and library information.

By the same token, the application of telecommunications techniques and networks to computers has

transformed the practice of data processing from an isolated activity to a service on demand. That change has demolished the previous demarcation lines between the computer manufacturer supplying specialized office and industrial products and the telecommunications organizations providing telephones and switchboards, cable networks and radio communications links.

The full potential of computer data transmission was first accomplished over earth links (co-axial cable and radio channels) and later by a satellite link encircling the planet. In the past decade the capacity of civilian international satellite communications links has jumped from 150 to more than 15,000 circuits. The growth of satellite communication has been spectacular and shows no sign of easing.

In the short time that satellites have flooded the earth with messages they have become an integral part of the activities of organizations like news agencies, press and broadcasting services, business, banking, commerce, agriculture, mining, aviation, navigation, meteorology and entertainment. Yet fewer than 40 of the 2,200 satellites launched since 1957 are for communications and these can be divided into four categories by use.

There are two global systems: the Intelsat organization, which has more than 100 member countries and the Intersputnik network established by the Soviet Union. At the next level come a number of developing domestic and regional satellite systems. Third, there are the specialist marine and aeronautical satellites for communications and navigation purposes. Fourth are the military communications satellites.

A recent study by the American National Aeronautics and Space Administration forecasts a demand in the United States for more than 300 video channels, more than 20 million more telephone channels and an annual data volume of 40 million terabits (tera is the symbol denoting one million million) within 20 years. That is equivalent to the capacity of another 100 of the current type of satellites which RCA and Western Union operate for their domestic services.

Even allowing for advances

in the size of satellites, that demand would still need between 30 and 40 satellites to be placed in the part of the geostationary orbit which has to be shared with 50 other countries. There are four domestic satellite systems in America. In addition to Western Union and RCA, a joint service called Comstar is run by two giant telecommunications companies, AT & T and GTE, on a space station leased from the Communications Satellite Corporation (Comsat). But the most recent network is a E300 venture, Satellite Business Systems (SBS), owned by IBM, Comsat and the Aetna Life Insurance company.

There is a unique aspect of satellites which, with their immense capacity and combined use with computers and television, is forcing the pace in information technology. Since the origin of the telephone, distance has been the major element in fixing tariffs and in curbing the use of the telecommunications networks. With the introduction of satellites, it is no longer an important factor. In a recent book, *Global Talk*, Dr Joseph Pelton says as telecommunications services have become faster, they also have become cheaper. A one-page telex sent from New York to London cost today about \$12. A one-page letter or technical drawing sent by the Intelsat network is about \$5; and a three-minute telephone call on the public network costs as little as \$3.16. Twenty years ago public overseas calls were 20 times higher.

## Electronics

Some years ago Dr Marvin Kelly, then director of the Bell Telephone Laboratories in the United States, called two of his senior research physicists to his office to witness an experiment by another staff member. The demonstration was conducted with a rectangular black block, smaller than a cube of sugar, which had little metal contacts at either end. The device was made from a then little-understood material.

When a band of flashing light was allowed to flicker over a narrow region near the centre of the block, a tiny voltage of about 0.5 volts was

generated between the two contacts.

The little-understood material was silicon. And the demonstration given by Dr Russell Ohl showed the first operation of what electronic engineers today call a  $p-n$  junction, which is the electrical effect on which the microelectronics industry is founded. But that original experiment occurred in 1940. It marked only the start of the research that gave birth to semiconductor electronics by an already famous team of solid state physicists at Bell Laboratories, and which led first to the discovery of the transistor, earning Doctors Walter Brattain, John Bardeen and William Shockley a Nobel prize for physics in 1956.

The impact of that original demonstration of the intriguing properties of silicon is told in a personal account of the discovery of the transistor by Dr Brattain. Subsequent research produced a number of materials which can be endowed with the unusual qualities needed to make  $p-n$  junctions. Silicon is particularly attractive because of its abundance, being one of the main constituents of sand. Its value to the electronics engineer is that it can be made to be either electrically conducting or non-conducting.

The trick is to make a crystal of pure silicon and then introduce the tiniest trace of a special impurity into it by a process referred to as "doping". Only a microscopic area is doped with the impurity, but it is enough to cause a deficiency of electrons in this small zone to form a so-called  $p$ , or positive, zone. An adjacent area is doped to get a surplus of electrons creating an  $n$ , or negative, zone. Hence the name for the complete arrangement is a  $p-n$  junction.

More important, when two  $n$  zones are separated by a  $p$  zone they form a transistor, which is an electronic switch. Many thousands of transistors can be formed on a single chip. Moreover 250 chips can be made from one disc of silicon, 3 ins in diameter and one-fifth of an inch thick, which has been sawn from a silicon rod 3 ft long.

There is no other manufacturing process like it. Each disc is smoothed and then

continued on next page

Data, voice and text.  
In the form of data terminals, telephones and telex, these separate systems are indisputably the three prime methods of business communication.

The trouble is, although each system becomes increasingly sophisticated as technology improves, there has always been one major drawback. An incapacity for each of the systems to communicate with the others.

In effect, there have been barriers preventing intercommunication caused by the varying communication patterns and characteristics of each of the systems.

Meaning that they've all spoken a different language. Until now.

For ITT Business Systems has introduced a common denominator in the form of new technology which uses the Information Transfer Module. ITM for short.

# Only we can interconnect them so they can intercommunicate.

In converting the different signalling languages of each of your communication systems, the ITM links them all up together by effectively removing the barriers which have so far kept them apart.

But to explain precisely how it all works would take a technological age.

Suffice it to say that thanks to our innovative approach and our experience in data, voice and text systems, the phone can now talk to the telex, the telex can speak to the data terminal and the data terminal can converse with the phone.

The applications are unlimited. And surprisingly enough, this apparent miracle can be accomplished using your existing equipment.

No need for any replacements. We will advise you how to add this new technology to your current systems.

Your present telephone, telex and data network systems are simply waiting for Information Transfer Technology.

And in order for them to talk to each other, all you have to do is talk to us.

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We have the technology to transfer all the information quickly to you.

ITT BUSINESS SYSTEMS IS THE BUSINESS COMMUNICATIONS ARM OF STANDARD TELEPHONES AND CABLES PLC.





Any technology gathers a jargon of its own. Information Technology is a mixture of computing, telecommunications and micro-electronics, so the jargon is even richer than usual. Here is an alphabetical ramble through some of the words and phrases the explorer of IT might stumble over.

**A** Artificial Intelligence (AI). Although it may seem that computers have taken over, they remain tools controlled by people. So-called computer errors are really caused by humans giving computers the wrong instructions. AI would allow a machine to learn, and then take decisions on the basis of experience. Widespread application is held up by two things: the need for vast processing power, and uncertainty about how the human brain works. Automated Office. Computers began automating the accounts office 30 years ago, and now word processors are automating typing. But that is just the start. The words can be sent by electronic mail, along with graphics, and discussed over a voice and vision link. Information can be filed electronically, then recalled selectively for automatic collation. Integration will be a key factor. In the office of the future all sorts of equipment — telephones, facsimile, copiers, and writers, computers — will be linked together to work as a single system.

**B** Basic. A computer language, from Beginner's All-purpose Symbolic Instruction Code. Computers only understand machine code languages, but high-level languages like BASIC enable programs to be written in something approaching plain English. Other high-level languages include ADA, CORAL and PASCAL, as well as the sci-fi sounding ALGOL, COBOL and FORTRAN. Bit. The basic unit of computing, an abbreviation of binary digit. All data can be expressed in binary form, combinations of 0s and 1s (1 is 001, 2 is 010, 3 is 100). Clumsy for normal purposes, this two-state notation allows a computer to process data by a series of on-off switching actions — something which electronics can do very quickly. Similar digital techniques are now being applied to transmitting speech, recording music or handling television signals, where benefits include better reproduction and greater processing capability. A group of bits is called a byte (usually eight bits).

**C** Cmos. A type of semiconductor device of increasing importance. Integrated circuits (or silicon chips) are of two kinds: bipolar, characterized by high speed, and MOS, which are more com-

**A-Z of Information Technology**

plex. CMOS circuits (from complementary metal-oxide semiconductor) are similar to MOS, but have very low power requirements. Watches and calculators use CMOS, so you do not have to keep changing the batteries, and as more CMOS circuits become available there should be a wider variety of portable electronics. Cambridge Ring. A local area network developed at Cambridge University. Central Processing Unit (CPU). The part of a computer system which controls all the operations, and carries out the arithmetical and logical functions. A micro-processor is a fairly simple CPU on a single chip. At the other extreme is the number cruncher, a computer which handles very complex calculations.

**D** Data Base. Any collection of information, even a bulging filing cabinet, is a data base of a sort. In the world of IT, data bases are files kept in an order, or electronic form, which can be accessed by remote users following a defined procedure. Disc. Storage of computer data is often on magnetic discs. Information is added or accessed at high speeds with read-write heads. Floppy discs — popular for small

computers and word processors — can be taken out and stored, like a gramophone record. Increasing use is being made of the Winchester disc, which unlike the floppy cannot be removed, but which may cram in 50 times more data.

**E** Expert Systems. If you can persuade experts to tell a computer everything they know, anyone can tap into the information so as to become, in theory, experts in turn. The snag is that expert knowledge may not be amenable to computer storage: how do you codify judgment and intuition, as well as facts?

**F** Fibre Optics. Instead of sending electrical signals over copper cables, information can be transmitted as pulses of light over hair-thin strands of glass fibre. Capacity is far higher, so additional services like two-way TV become possible. British Telecom is laying the world's longest optical fibre link, between London and Birmingham, and expects to buy and install well over 60,000 miles of fibre during the 1980s.

**G** Forgiving Systems. A computer or other system which allows the novice to make mistakes without chaotic or disastrous consequences. Confused users may be able to press a "help" button, which will call up a series of prompts on the display screen to lead the way out of trouble.

**H** Hardware. It used to mean the things standing outside an ironmonger's shop, but today hardware is the physical equipment which makes up a computer installation, including the CPU and all the peripheral units. Software is the programs which tell the hardware what to do, and can include firmware, a permanent form of software. The people who write the programs and operate the computers are sometimes called liveware.

**I** Information Technology (IT). Favoured term for the convergence of techniques in computing, microelectronics and telecommunications to produce, store, access and send information of all kinds, whether pictures, words or numbers. Obviously significant in business, but also invading the home: teletext and personal computers are IT, but Hollywood movies on a video machine are probably not. Interface. A plug and socket is an interface, but if computer equipment is to work together it must be compatible in software terms, as well as electrically. An interface unit may, therefore, convert data from one form to another so that different units can be combined. The man-machine interface is as much a philosophical approach as a matter of hardware, and aims to ensure that people control machines, rather than the other way round.

**J** Josephson Junction. The faster a computer can switch data, the faster it can complete a calculation. For more than 20 years the phenomena of superconductivity have seemed to offer the prospect of unrivalled computing speeds, but the need for extremely low temperatures has so far made the technology impracticable outside the laboratory. The Josephson junction has to be cooled by liquid helium, but can then switch at a speed of less than 100 picoseconds (a picosecond is one million-millionth of a second). Promising, but experimental.

**K** Keyboard. After years of being tapped by typists and teletype operators, keyboards have found a new role as input devices for computers and word processors, and to handle other control tasks. The typewriter-style "qwerty" keyboard is still popular, but hand-held keyboards — usually called keypads — arrange the keys in a variety of ways. A hexadecimal keyboard, or hex pad, is used with microprocessors. It has 16 digits: 0-9, plus A, B, C, D, E and F, to represent 10-15 as single strokes.

**L** Light Pen. Another way of communicating with a computer is to place a photosensitive pen-like device on the screen of a terminal. The points where the light pen touches convey instructions to the computer, making it draw lines or circles on the screen, or selecting an item from a list of optional functions. Another form of light pen, sometimes called a wand, reads data in the form of thick and thin lines which form a bar code. Used at supermarket checkouts and for other data input purposes.

**M** Mainframe. The largest type of computer installation, needing a specially constructed, air-conditioned

Local Area Network (LAN). By installing a special cable in a building or group of buildings, computing and communications equipment can be connected at any point, and made to interact by screening signals round the ring or loop of cable. Another approach — promoted (not surprisingly) by telecoms companies — links the equipment over the existing telephone wires, creating a star network rather than a ring. Signals go to a central PABX to be processed and sent on to their destination.

Continued from page 3

highly polished to the quality of scientific optical glass. A microscopic scratch on the surface renders subsequent work on the material valueless. The discs are heated to between 1,000 and 1,200°C to create a hard coating. In the next stage a layer of a polymer material sensitive to ultraviolet light, and known as a photoresist, is applied. Next a tiny photographic plate or mask, of the chip's electronic circuitry, scaled down from a drawing 250 times bigger, is used to etch a pattern of electronic components by photolithography.

But the technology of silicon chip fabrication is moving rapidly to increase the number of components on existing large scale integrated circuits of 10,000 to 20,000 to very large-scale integration of 100,000 to 200,000 components and beyond.

Pearce Wright

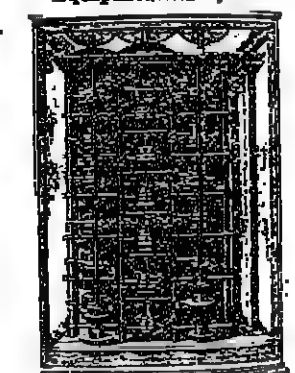
## Landmarks over 300 years

The products of information technology are things like office automation, microprocessor controlled washing machines and cookers, industrial robots, video telephones, electronic games, automatic bank cash dispensers, electronic mail and large data processing systems — to name a few. But they emanate from a gradual merging of the four technologies listed below.

### Computers

- 1642 Mechanical Calculator Blaise Pascal, France
- 1833 Calculating Machine (analytical engine) C. Babbage UK
- 1889 Punch Card Tabulating Machine H. Hollerith, USA
- 1939 Mark 1 Digital Computer H. H. Aitken, USA and IBM
- 1946 Eniac (Electronic Numerator Integrator & Computer) Moore School, University of Pennsylvania, USA
- 1947 Commercial Electronic Computer P. Eckert and J. Mauchly USA
- 1948 Edsac (Electronic Delay Storage Automatic Calculator) M. V. Wilkes, Cambridge University, UK

- 1951 1st General Purpose Computer Ferranti, UK
- 1960 1st Solid State Computer Univac, USA
- 1961 1st Microcomputer Digital Equipment Inc., USA



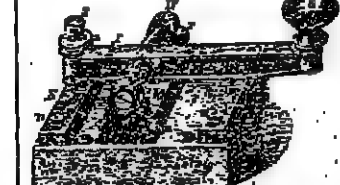
The first "computer", the analytical engine designed by Babbage.

### Electronics

- 1898 Magnetic Recording V. Poulsen, Denmark
- 1919 "Flip Flop" (binary) circuit, Eccles & Jordan, USA
- 1948 Transistor Bardeen, Brattain & Shockley, USA
- 1952 Integrated circuit concept G. W. Dummer, UK
- 1958 Laser A. L. Schawlow & G. H. Townes, USA
- 1959 Integrated silicon circuits J. S. Kilby, USA
- 1962 Silicon Chip S. R. Hofstein & F. P. Heiman, USA
- 1963 Electronic Calculator Bell Punch Co., UK
- 1970 Floppy disc IBM, USA
- 1972 Microcomputer Intel, USA
- 1972 Video Games Magnavox, USA

### Telecommunications

- 1837 Morse Code on-off telegraph system, Samuel Morse, USA
- 1847 Submarine Telegraph Cable W. Siemens, Germany
- 1876 Telephone Alexander Graham Bell, USA
- 1896 Wireless Telegraphy G. Marconi, Italy
- 1925 Television J. L. Baird, UK
- 1945 Arthur C. Clarke proposes communications satellites
- 1948 Holography (three dimensional pictures) D. Gabor, UK
- 1950 MODEM (made high speed data transmission possible) MIT & Bell Labs, USA
- 1957 Sputnik 1 1st artificial satellite, USSR



Morse Code — first practical demonstration linked Baltimore and Washington, 1844.

### Word processing

- 1714 Typewriting history begins with a British patent to Henry Mill for "an artificial machine for impressing letters on parchment..." No details survive of invention.
- 1829 First machine capable of practical work. Called a Typographer. William Austin Burt, Detroit, USA.
- 1867 First typewriter in constant use. Christopher Latham Sholes, New York, USA.
- 1872 First electric machine, consisting of a printing wheel, invented by Thomas A. Edison. Later developed into the steeper-type printer.
- 1873 C. L. Sholes signed contract with E.

- Remington & Sons, gunsmiths of New York, USA.
- 1909 Introduction of portables.
- 1937 Xerography. Electrostatic images transformed into a powder image and fixed by fusing. Chester Carlson, USA.
- 1961 Golf ball machine introduced by IBM, USA.
- 1963 Ink Jet Printing. Method of forming, charging and directing ink electrostatically to form words. R. G. Sweet, USA. Technique extended by A. M. Lewis and A. D. Brown.

(Research by Pearce Wright. Main source: *Electronic Inventions and Discoveries* by G. W. A. Dummer) published by Pergamon Press.

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room. The microcomputer was originally a more robust but less powerful machine, usually sold to original equipment manufacturers (OEMs), who incorporated them in industrial or scientific systems. Today mainframes have become smaller, while minis are more powerful and may be sold to end-users, so distinctions are blurred.

**Microcomputer:** Rather imprecise term for: (1) a complete but small computer based on a microprocessor; (2) a microprocessor and its peripheral chips mounted on a printed-circuit board; (3) a single chip containing all the circuitry for a microprocessor, RAM, ROM and input-output functions.



Videotext — information on a television screen.

**N** Non-volatile. Magnetic storage (tapes, discs, ferrite cores, bubble memories) is non-volatile, meaning the data is retained when the power is switched off. Semiconductor memories, such as those used in pocket calculators, are normally volatile: switch off and you lose all the data. Some volatile memories are fed with minute amounts of power continuously to make them, in effect, non-volatile.

**O** Operating System. Not hardware, but software — the set of instructions in a computer which supervises and controls input-output functions and the running of programs which handle specific applications.

**Q** Query Language. Until recently, only trained people have been able to communicate with computers. Now there are over 100 query languages, which, akin to break down the barriers. Most allow limited English commands to be accepted by the computer, though some claim to make completely free-form English acceptable.

**P** Patx. As well as handling telephone calls today's private automatic branch exchange (PABX) can provide such facilities as abbreviated dialling, automatic re-call of busy lines, queuing of incoming calls, conference facilities, and the switching of data as well as voice. The

time, so work would pile up. With time sharing, many people can use a computer simultaneously, each operating from his own terminal. The computer processes parts of separate jobs in sequence, but users gain the impression they have the computer to themselves. Time sharing is still a valuable facility, but distributed processing has put more power at the terminal, and personal computers allow users to undertake simple computing tasks completely independently.

**U** User friendly. Aware that most people think a computer console is about as easy to understand as the flight deck of Concorde, manufacturers are putting much effort into taking out the mystery. Touch a button, and the screen will display a menu, from which the user can select the service he wants. More button-pushing will lead through a series of instructions. Along with forgiving systems and query languages, the user-friendly approach means that even beginners can come to terms with a computer.

**V** Very large-scale integration (VLSI). The first integrated circuits put only a few components on a chip of silicon. Next came medium-scale integration (MSI), with hundreds of components, and then large-scale integration (LSI), with thousands. Now VLSI puts as many as 100,000 components on a chip. Designers see no barriers to integrating a million components.

**Videotext.** A generic term to describe TV-based information systems. Teletext, which includes the BBC's Ceefax and ITV's Oracle, broadcasts "pages" of data which can be selected with a suitably modified television set.

**Viewdata.** Links the TV to the telephone and gives a more varied, interactive service by connecting users to a central computer. Prestel, British Telecom's viewdata service, is for public use, but many businesses are also using private viewdata systems.

**W** What-If Games. Computer software is available which allows users to change one

variable in a set of data, and see how this affects all the other variables. A businessman can ask "What if the price of oil rises by 10 per cent?", push a few buttons, and see whether he can survive the next energy crisis. A powerful planning aid, though viewing the results may call for strong nerves.

**Work Station.** What every smart executive will be sitting at, instead of a desk. As well as a telephone and personal computer, it's likely to include facsimile, data terminal, videophone, viewdata units, and much more. The very essence of IT chic.

**X** Xerography. The technology which brought plain-paper copiers into virtually every office. Despite rumours that the paperless office is imminent, copiers are likely to go on flourishing. They may even become electronic mail terminals, sending and receiving text and graphics to and from many locations.

**X** is also the international symbol in telecommunications signifying digital operation, in which the 0s and 1s of computer language are used to switch telephone calls and transmit both voice and data. System X is Britain's digital exchange family, and British Telecom is launching a digital communications service called X-stream.

**Y** Yield. A key factor in the falling cost of integrated circuits. Hundreds of circuits are made at the same time on wafers of silicon, passing through a complex series of processing steps. At the start of production many devices fail, but yield goes up as manufacturers move down a learning curve. Prices drop dramatically, because more good products are produced without any additional cost in materials or processing.

**Z** Zap. The programmable read-only memory (PROM) can be programmed using special equipment. This is known as "PROM blowing". When the program is erased, the PROM is said to be "zapped".

Roger Woolnough

## It's a job to choose

The best advice to anyone seeking a micro-computer for business use is to beware! Choosing a personal computer, other than one to play games on, is to join the new high street jungle warfare.

It took me a long time, spread over nearly two months before I was able to pinpoint the machine of my choice. During this period I visited many of the High Street shops and so-called "computer centres", talked to dozens of salesmen, and read through piles of manufacturer's blurb and scanned many a computer magazine. Personal Computer and Micro Decision — two of the best sources of information. It is quite obvious that there are far too many cowboys selling both hardware and software — the programmes to make the computer do what you want it to do. If you are only interested in games the problems are reduced as the knowledge and effort which have gone into producing computer games is totally out of proportion to that spent on the more serious uses for small computers.

Many sales assistants seemed to know little about many of their own products. When unable to answer relatively simple inquiries a more senior person, usually the manager, was called. The such person which was all too common was that the manager would immediately try to "sell you up" in other words try to persuade you to buy something more elaborate (according to him) and much more expensive than what you had first been interested in. With the software or actual programmes the situation becomes even worse for the innocent buyer.

The computer magazines are full of stories about people who have bought programmes for accounting, stocktaking or word processing which simply cannot do the job they were led to believe. Admittedly there is an enormous complexity of equipment but the customer should be able to expect some basic guidance.

On word processing programmes, which was my own interest, it was not so straightforward as I might have imagined, judging from the dozens or so programmes on the market. Did they all have capital and lower case letters for display on the screen? Was it possible to have more than 40 characters (too few) per line, or could it go to 80 per line? How many lines per "page"? What editing facilities? How com-

plicated are the commands?

The more you learn the more complicated it all becomes. Even after you have chosen your computer, its printer, additional disc drives, and the programmes there are still many unsuspecting shocks. Generally speaking most companies, with some exceptions, only offer a 90-day guarantee on the hardware. Luckily there seems to be a trend for giving longer guarantees. Most companies offer a maintenance contract which usually costs at least 15 per cent per year of the original capital outlay — quite expensive. The small print of these contracts also needs examining closely to avoid pitfalls over the exact meaning of "24-hour service" and similar phrases. It is no good buying a computer from a company in Leeds if your office is based in Bristol unless the company has a nationwide network of some kind. This is one reason why it is all the more important to buy equipment, and especially programmes, from well established reputable companies. So many software houses have sprung up over night offering a wide variety of programmes which apparently cure all ills, but many of these companies vanish as fast as they have appeared.

Computers do not automatically increase productivity but they can increase efficiency. The first thing is to have a good look at your own system of paperwork and see if that can be improved before even thinking about a small computer. One man who is very outspoken on the subject is Mr Bob Robinson, of Byte Shop Computerland, an expanding network of branches up and down the country. Mr Robinson, who has been involved with microcomputers since the early days in 1963, believes there are five basic questions a customer should ask himself. Have I got a system that already works without a computer? If I buy a computer would I need to take an extra staff, and if so would there be an increase in productivity? What would be the return on the capital investment, in terms of productivity, and how long would it take to repay the return on the extra investment? Will I be able to reduce my staff? The answer to this, according to Mr Robinson is "definitely no". Am I really trying to do the job? In other words do I think a computer is some kind of magic wand to solve my own inefficiency? (It is not.)

Mr Robinson says that most small businesses do not need a computer for accounting or stock control unless they have a minimum turnover of between £50,000 and £100,000 a year. He adds: "You must be able to trade off the extra profit against taking on the extra staff to operate the computer, not to mention the initial capital outlay and maintenance costs."

One of the most useful functions performed by a small computer is mailing and invoicing and Mr Robinson believes it is possible to buy a system for between £5,000 and £7,000 which would cover the needs of the small businessman but he could go up to £18,000 if future expansion and productivity warranted the expenditure.

Another major problem facing the customer is the question of documentation for both computer and programme. Manuals are on the whole badly written, often too full of jargon, and quite often have many mistakes, particularly those dealing with the actual programmes to run on the computer.

The Osborne Computer Corporation produces some of the best software and some of the most readable and understandable manuals. Adam Osborne, the man behind the company, a kind of American answer to Britain's own Clive Sinclair, the first to produce a mass-selling computer for under £70, has also just come out with an unusual software-hardware deal in the form of the Osborne I computer. He offers a package deal of five standard programmes including accounting and word processing and mailing, along with a new mini-micro computer.

It was the Osborne I which I finally settled on. No larger than an electric sewing machine it is entirely portable, complete with twin-disc drive (enough memory to store a small novel) and tiny monitor screen (it can also plug into a larger video screen). The complete package with programmes costs about £1,250 plus VAT and is just the thing for the wandering journalist. He can plug it into his car or boat battery system, and it will even fit under an airline seat. In time, and unions permitting, I could write this article, which started life on the Osbournes, anywhere in the world, hook it up to a telephone and send it direct for editing and typesetting to the office.

Michael Frenchman

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The good, the bad and the ugly face of change: the fears and attitudes are explained here and on the facing page

## Unions: still in benefit?

Unions facing the threats of job losses from the introduction of new machinery and the economic recession are having to re-think their approach to pay bargaining and in some cases fight for their survival.

The various predictions of job losses caused by technological advances, with unemployment figures perhaps as high as five million by the middle of the decade, have wrought from the unions a new negotiating approach which is based on no compulsory redundancies and a rapid move toward shorter working time.

In addition to the jobs threat, unions are also concerned about the quality of work that will be left for those still in employment; model union bargaining procedures insist that negotiators pay attention to the technological implications on job satisfaction, health and safety and other related issues.

Unions strenuously deny that their basic attitude toward new technology is one of hostility and resistance but they are adamant that the new technologies should be harnessed so that the benefits are shared equally with the workforce.

The central union philosophy is perhaps best summed up by Len Murray, who is not just a question of accepting the new technology or fighting it. The issue is how we can maximize its benefits and minimize its costs, and ensure that its benefits are equitably shared," the general secretary of the TUC said.

The TUC has played an increasing role in organizing education forums on new technology for negotiators, but a great deal of research has also been done by individual unions.

Union officials believe that the advent of robotics in industry on a wide scale is some years away, in spite of their appearance on the assembly lines at Ford and British Leyland.

Tim Webb, a national officer of the Association of Scientific, Technical and Managerial Staffs (ASTMS), and the TUC's representatives on the Year of Information Technology committee, thinks that the unions are about to face a "second wave" of new technology.

That would mainly come in the areas of banking, insurance and finance, while the first wave in the electronics industry and clerical areas is already here. Mr Webb said that the effect on the electronics industry which was in the first place responsible for designing the

new systems, has been like "the sword that turns on its self" and he gave instances of big job losses in the television manufacturing industry.

He hopes that the Year of Information Technology will focus attention on the problems as seen by the unions and open up a debate on the changes that are necessary if society is to be able to cope with the new working systems.

Mr Webb wants to see the Government's commitment to the Year of Information Technology translated into providing extra funds to cope with the structural changes needed in work and leisure, brought about by the lower demand for traditional forms of labour.

That theme is central to *The Leisure Shock*, a book published in the summer by Clive Jenkins and Barrie Sherman, respectively general secretary and director of research of ASTMS. They suggest that the words "work" and "leisure" should be removed from the vocabulary and replaced by "activity" and "usefulness".

They paint a gloomy picture of the consequences if new technologies are introduced without changes in attitudes, particularly to the work ethic.

A "slave society" should be introduced with new machines being the servants of workpeople who should then have much greater leisure opportunities. Jenkins and Sherman say that unemployment pay should be raised to more realistic levels, financed by the increased profits flowing from slimmer down and more efficient industries, and they believe that the education system needs to be more "life orientated".

In the book they argue that it may even be too late now to start bringing about the changes that are needed because it will take many years to bring about the necessary change in attitudes to the old fashioned work ethic.

The authors express concern about the growth of fringe political parties of the right and left and the feeling of alienation among young people, caused, they believe, by the recession and high levels of unemployment.

The emergence of a "Clockwork Orange" society is a nightmare but one coming closer to reality each day that passes without "positive action," they say.

Trade unions' specific demands for smoothing the introduction of new technology include consultation and agreement before its

implementation in plants, big re-training programmes and new forms of redundancy payments.

Employers, too, recognize the value of consultation with their workforces. A recent survey by the Confederation of British Industry pointed out that those companies engaged in genuine employee consultation were enthusiastic about the results, which included a more ready acceptance of new technology by their workforces.

Retraining and relocation of workers on the scale imagined by the unions would require large government funds and the changes in industry and society should be brought about in the framework of a planned economy with large measures of state intervention, the unions argue.

The TUC laid great store on a joint statement on new technology agreed in long negotiations with the CBI. The statement, which laid down basic principles to be adopted in the introduction of new machinery was approved by Congress last year, but when it was sent out for ratification by the CBI, its members objected and vetoed it being signed.

There was apparently concern among the companies that the statement went too far toward accepting union philosophy on shorter hours and redundancies.

The TUC's education department has produced a series of guides for affiliated unions and shop stewards on negotiating practices to be adopted with employers. One says: "There are real choices to be made about the pace, type and social effects of technological change. It does not have to occur at the expense of union members' jobs and working conditions."

It goes on: "Our key aim should be to work for change by agreement. Trade unionists need to bargain for vital safeguards to jobs, skills and pay and also influence decisions about investment, products, job design, work organization and so on. The ability to do this will depend on willingness to review union organization and change it to meet the challenges that new technology presents."

Those changes involve more inter-union cooperation at plant level and the sweeping away of traditional rivalries. Some of the changes are beginning to take place but progress is slow as unions defend jealously their territory.

David Felton  
Labour Reporter

## Educating the managers

Mr Kenneth Baker, Minister for Information Technology, (IT) recognizes that fewer than 50 per cent of British companies are presently using IT to improve their efficiency and production, yet, according to a recent survey conducted by MORI, more than half of the British public now believe that "IT is essential to Britain's future prosperity".

While factory automation contributed to an increase in productivity of more than 80 per cent between 1960 and 1970, today's office looks very much like yesterday's office in terms of investment in electronic equipment, staff numbers and types, and the organization and methods of working.

At a recent conference on the new technology at work, Mr Tom Stewart, a senior consultant with Butler Cox and Partners, highlighted some of the areas which caused managers' apparent unwillingness to adopt IT, and why gains in the office are likely to be less dramatic than in the factory.

Mr Stewart believes that the mental skills involved in office work have proved more difficult to assist or replace than the physical skills in manual work. Second, the social cost of productivity improvements is now being questioned to a far greater extent than in the 1960s.

"Higher safety standards, more concern about the quality of working life, and a greater awareness of the implications of redundancy for the individual worker now make some of the apparent benefits of automation less attractive," he said.

Management attitudes towards IT are often hostile as a result of previous experiences.

According to Mr Stewart, past predictions have often failed because of under- and over-estimating the rate of development. He says the most common reason why predictions fail is that "they overlook or ignore human behaviour creates technical progress creates opportunities, human behaviour turns the opportunities into reality (or not)".

Most managers see the introduction of IT as a major disruption to established organizational structures and patterns of work. That can mean lengthy arguments with the trades unions and employee representatives, especially over such sensitive issues as job evaluations, loss of jobs and changes in working practices.

At the same conference, Mr Malcolm Hamer, the telecommunications manager at Citibank, confessed that

successful automation "is nearly always painful". He says projects will go wrong if there is inadequate consultation with staff involved or not enough discussion on the effects IT will have on the organization of the office. It is, therefore, necessary to have a more participative management style which is not always easy to adopt overnight in an authoritarian organization.

Mr Hamer says that the whole field of IT is bewildering, "and the fact that experts seem to disagree so violently is no comfort to the novice". He suggests that management's attitude towards IT in the office should be to look very carefully at your office, what goes on in it, how much effort each task involves, and which functions can be most 'cleanly' defined as a single entry and start with those, looking at solutions for a specific problem, rather than products which are solutions looking for problems to solve.

Mr Tom Elliott, managing director of UIMC, a management consultancy with a prime role to service the Unilever companies, is acutely aware of the resistance to change that can occur as a result of entrenched management attitudes.

"Managing change, which IT dictates, is always seen as a threat," he says. He sees the biggest problem as one of education. "It is essential to make managers appreciate the opportunities of technology and to stimulate them to think of ways that IT can help them in their jobs."

A major deterrent to this awareness campaign is, he says, the incomplete dialogue between the potential IT user and the data processing expert, the relationship between technocrats and those managers making business decisions. There is an urgent need, he says, for "translation" to overcome this dialogue problem.

I have interviewed many managers about technology and its role within an organization who are totally bewildered when faced with the language of the technological world. They resent the suggestion that they might be technically illiterate.

Mr Elliott acknowledges that this happens within some of the Unilever companies. He believes a way to improve the situation is for all managers to be encouraged to use a keyboard and to do simple programming, in that way overcoming their fear of the hardware.

Simultaneously, it is necessary to get data processing specialists to understand business strategy. Perhaps in 1982, the Year of Information Technology, we will create people who understand both a breed of business systems managers.

Mr Elliott feels that hostility among managers puts a block on progress, and it is essential to make people more aware of the benefits and opportunities of IT, and for them to understand its implications. This must happen before the company buys and installs the equipment.

One company which believes that a strong corporate philosophy towards IT helps to encourage positive management reinforcement of its benefits, is Commercial Union (CU). Its general manager for Information Systems, Mr Peter Smith, emphasises the importance of marrying technological plans to business needs. This is done under the umbrella of a corporate policy, understood by all managers, intended to give the customer better service, with a minimal delay in insurance handling.

By linking IT to everyday business life, the new methods gain acceptance and credence by all managers in an organization, not just the data processing and technical support staffs.

Mr Smith believes strongly in employee consultation. Part of the problem, he says, is keeping the expectation level lower than the publicity level. "There is always a fine judgment of the time factor, involving interested parties, publicizing the event, and then waiting for it to happen."

Mr Smith sees no alternative to a policy of technology being managed from the top. The mistakes can be very costly, even catastrophic, if there is no leadership. Without the right management attitudes and understanding towards people and technology it seems unlikely that Britain will radically increase its use of IT.

Companies like Unilever and CU provide a clear message: Decide a positive corporate philosophy towards IT. Educate managers in a thorough understanding and appreciation of IT. Adopt a participative management style for everyone involved.

Lynda King Taylor

MORI survey: Conducted by Market & Opinion Research International among a representative quota sample of 1,901 adults aged 15 and over in 453 conventional sampling points throughout Britain.

Survey conducted for Information Technology Year 1982.



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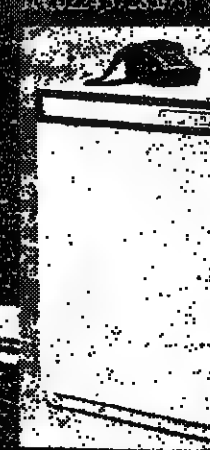
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## They have you taped — and there aren't enough safeguards

It is now more than 20 years since the first attempt was made — in a House of Lords Bill — to introduce a data protection law for the United Kingdom. We still do not have one. Since 1961, the growing threat to privacy posed by data computerization has been the subject of several more private Members' Bills and debates in Parliament, numerous reports, official and unofficial, and a Government White Paper.

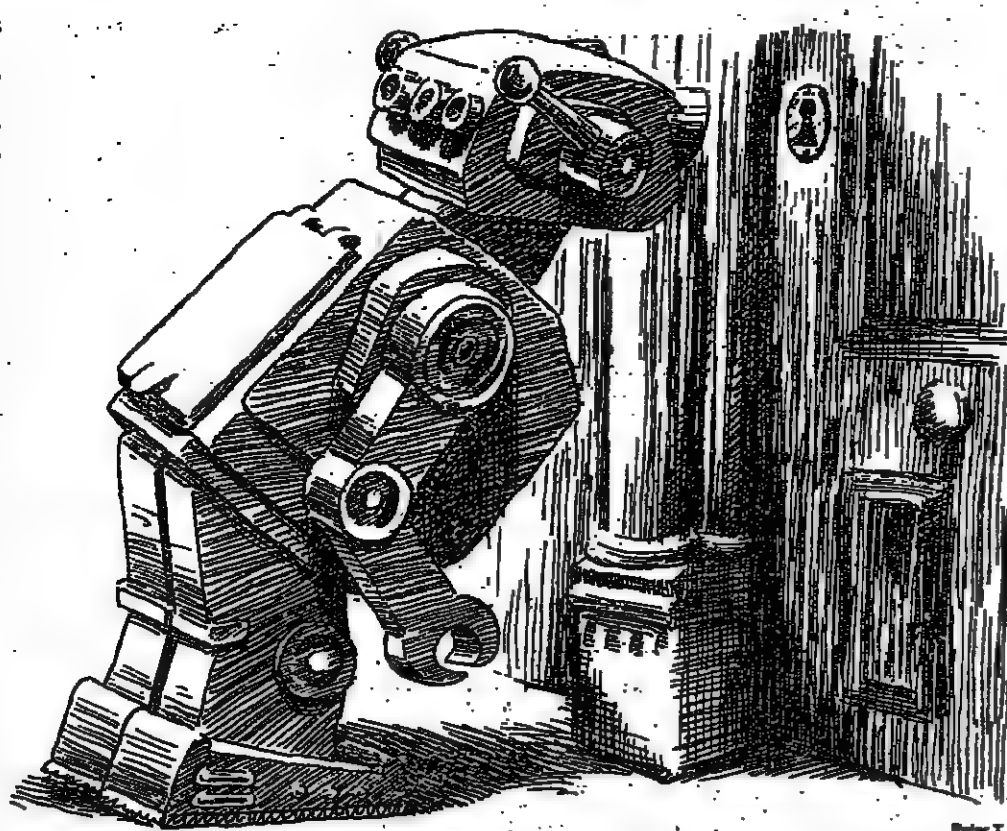
Almost nothing has happened. Rarely can government inaction on a subject of national importance have reached such proportions. Now, its hand is forced by the implementation of a European Convention on data protection, the Government has promised another White Paper, with legislation to follow when time permits. The consequence of these years of delay is that Britain is now firmly established at the bottom of the league of Western European countries in the area of data protection. This has implications not only for civil liberties, but also for business. Where Britain once led the field in data protection systems, it will once again find itself having to catch up with competitors that have outstripped it. The missed opportunities are incalculable.

The dangers of increasing computerization of personal, official and business information have long been recognized, and as scarcely any longer controversial. First, data can be stored which is inaccurate, incomplete or irrelevant, and yet can be used as the basis for important decisions affecting people's lives.

Second, people may have no idea of the information kept on them, have no way of finding out, and no opportunity to correct mistakes. Third, there is the possibility that the information can fall into unauthorized hands, who could use it for all sorts of purposes. Fourth, the information could be used for a purpose other than that for which it was gathered. Fifth, that because computer systems can now communicate with each other easily and speedily, the possibility is increased that comprehensive Big Brother files will be compiled on private citizens.

From birth to death, every individual will regularly find something about him appearing in some file or other. Estimates of how many different files are kept on the average adult individual range from 5 to 50. Some may be thought trivial in themselves — though even library computers can now reveal that a reader took out a book on guerrilla warfare and another on Marxist ideology. Credit card files might disclose an inappropriate spending pattern. The Swansea Vehicle Licensing Department keeps tabs on every driver's change of address, and their computer is available to the police. The list of information kept on the individual — his health, income, social security position, details of his property, his car, his job, and so on — goes on.

Of course, for those who have been a trouble with the



Peter T.

police, or been members of an "undesirable" political group, even though they have done nothing illegal, or have particular sexual proclivities, the information kept on them multiplies. More and more of all this information has been removed from the old-fashioned filing cabinet and is being put into computers.

The need for safeguards is not limited to personal information. Business, too, needs protection. If a company's list of customers, or its pricing or production formulae, got into the hands of competitors, the result could be financial ruin. It is also claimed (though firm evidence was harder to come by) that British business has been losing out because clients were reluctant to leave their confidential information in a country which had no protective laws.

Business was not completely united in seeking tighter protection. The multinationals, in particular, were worried about what strict data protection laws would do to trans-frontier transmission of data — an essential activity for companies conducting international business. Guidelines issued in 1980 by the Organization of Economic Cooperation and Development (OECD) have

been largely accepted and followed, and the problem of trans-frontier data transmission is not as acute as it was a few years ago.

In 1978, the Committee on Data Protection, under Sir Norman Lindop's chairmanship, made a number of widely-welcomed proposals for the safeguarding of information on computer. Its central recommendation was that there should be an independent Data Protection Authority to regulate the way computer data was handled and ensure that the privacy of the individual was protected.

There would be different codes for different classes of data. The Lindop Committee set out the principles which should govern data protection: (1) The individual should know what personal data is being kept, why it is needed, how long it will be used, who will use it, for what purpose, and for how long. (2) Personal data should be handled only to the extent and for the purposes made known at the outset, or authorized subsequently. (3) It should be accurate and complete, and relevant and timely for the purpose for which it is used. (4) No more data should be handled than is necessary for the purposes made known. (5) The indi-

vidual should be able to verify that those principles have been complied with.

In spite of the Lindop Committee's call for urgent action, nothing happened until 1981, when the Council of Europe's Data Protection Convention was opened for signature. In effect, the convention does little more than highlight the principles laid down in Lindop, but it means that countries which become parties to it have to implement those principles in their national legislation. Only when Westminster passes its own Data Protection Act will Britain be able to ratify the convention.

To the dismay of all the interested groups which have been campaigning for such legislation for years, the

Government has decided to depart from the Lindop proposals on one crucial issue. Instead of setting up an independent Data Protection Authority, the Government announced that the relevant authority would be the Home Office itself.

As appalled critics point out, the Home Office is also a very substantial computer user. It is the department responsible for some of the most sensitive and controversial computers, such as those kept by the police, where abuses have already been shown to occur.

The Home Office, Sir Norman Lindop has commented, "can hardly be held to be impartial and disinterested in the area of personal information". That is a least likely to be the British Medical Association, the National Council for Civil Liberties and other campaigners for a data protection law. Critics also point out that the Home Office has been responsible for the years of inaction, a fact hardly conducive to inspiring confidence in its proposed new role as the country's data protection authority. Britain is at least likely to be the last to ratify the convention. The Data Protection Act of the statute books later this year (1982) or in 1983, but the debate over its content may prove highly controversial. The possibility that the Government will try to set up a system of ombudsmen to act as watchdogs over the use of delicate information is unlikely to placate all the critics. In the meantime, the other countries of Western Europe, and the United States, are happily carrying on with implementing their own laws, leaving Britain as in so many other fields, lagging badly behind where it was once pre-eminent.

Marcel Berlins  
Legal Correspondent

it  
TECHNOLOGY

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## Two men were watching a mechanical excavator on a building site.

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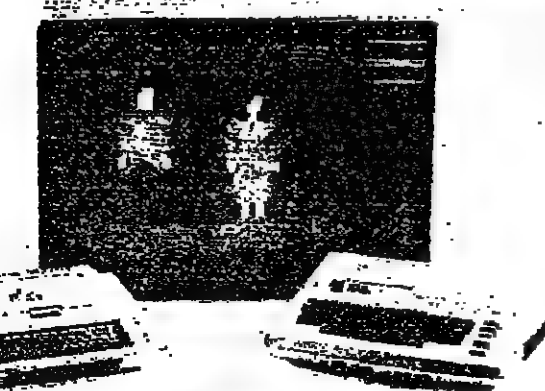
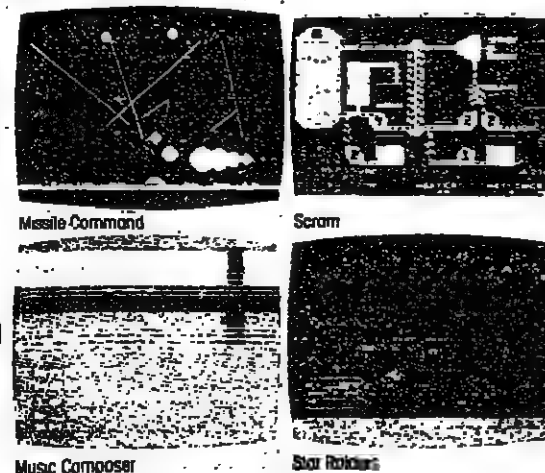
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## Mechanical marvels of the double shift

Momoe, Junko, Seiko and Yuko work a double shift every day at the Nissan car plant at Zama, outside Tokyo, turning out Datsun models for the home market and for export. They are precision welders, and their efforts are highly prized not only by management but by the Japanese auto-workers union.

They are, of course, robots. Painted white and surrounded by a six-foot-high electrically-isolated steel fence, their non-human ceaseless toil inspires a mixture of apprehension and admiration in those who see them for the first time.

The technicians who service these denizens of new technology have given each robot the name of a woman pop star or actress, and a coloured photograph of the lady in question stuck on the side stares out at you as the welding arm performs impossible gyrations to weld car bodies together.

Japanese attitudes towards new technology differ markedly from those of British workers. They welcome industrial innovation, and their whole cultural background is informed by the assumption that industry must continually adapt to survive.

This outlook is encouraged by the Japanese concept of himself as a worker. Ask him what he does, and he will commonly reply "I work for company X" — rather than "I am a welder". In Japan's almost-full employment economy, school leavers exercise much less occupational choice than in Britain, joining a company as a hand or a brain and turning their talents to whatever job is assigned them.

And according to diplomats with Western experience, Japanese society is in a process of constant change, so that practically anything new is readily accepted. Innovation is a powerful driving force, that some

argue is connected with the Japanese search for identity.

Japanese workers can afford to take a long view of new technology. The country's tradition of lifetime employment within one company means that workers displaced by innovative techniques are not sent out of the factory gate, as they might be in Britain, but are retrained and given a job elsewhere in the enterprise.

At the Nissan plant in Zama, factory manager Mr Nakayama outlined his philosophy to automation: "There are three reasons: quality is improved, and becomes more stable; human labour is replaced by robots where the work is very hard, and safety is improved; and there is a manpower saving."

The company has largely automated its body assembly line, and is now working on a second generation of robots to take over the paint shop and the final assembly line. This target should be achieved in four to five years.

It is at this point that a shadow crosses the face of union official Hiromi Kosaka, assistant general secretary of Jidosha Roren, the Social-Democrat affiliated autoworkers' union. "Our ideas are rather different", he insisted.

"We think it is very good to have robots where the work is hard, or there is a difficult working environment. However, there is a problem about unemployment. Up to now, we have been able to introduce robots without reducing employment because domestic and export sales were good."

"But if more robots come, there will be a problem. Of course, technical innovation plays a role in the improvement of productivity, so we are not opposed to this. But there is a problem concerning employment and the transfer of workers from one place to another." His answer to that: "There should be

constructive joint consultation between labour and management."

There was consultation when the robots were first introduced four years ago. Those few employees who were displaced were found alternative jobs.

Similar experience was reported from Asahi Shinbun, the mass-circulation Tokyo daily paper, where the introduction of computerized printing technology did not lead to lay-offs. Some workers were "loaned" to associated companies, with a wage-protection guarantee. Others were retrained and kept within the paper.

That is employment protection on a scale that British workers can only dream about, and it may not survive indefinitely in Japan. The lifetime employment system that underpins job security in the face of rapidly-changing technology is giving way slowly but surely to a more flexible system.

The huge gap between starting pay and the top wages paid to men in their mid-fifties, nearing retirement, is narrowing rapidly. Older workers tend to adapt less easily to technical innovation, and companies are being obliged to reward adaptability and skill as well as long service.

But while the Japanese economy continues to expand and national wealth keeps on growing, the unique job-for-life system it supports will permit the smooth introduction of new technology, which in turn contributes to economic growth. It is a magic circle of prosperity that Britain can only envy, but British companies intent upon going in for new technology in a big way are likely to find that union negotiators will insist on retraining and reemployment, Japanese-style, in factories here.

Paul Routledge  
Labour Editor

Below and on the next six pages the impact of this technology on our work and play is examined. Articles cover the effect on health, education, the office, home and finance

## Health on the bleep



A Commodore computer being used in a pharmacy to produce labels for prescribed drugs.

Confidentiality is the key issue when it comes to computerizing medical records — either as complete records or as selected items for an in-patient information system which would be used for health service management and planning.

An NHS committee has already produced recommendations on a national in-patient information system that can be run manually, or on a computer, and pilot projects are under way.

The British Medical Association, which has led the way in insisting that access to computerized medical records is safeguarded, will be watching these developments closely. Its objections to the lack of safeguards in the pre-school child health computing project — which includes among the information recorded items such as whether the mother has had an abortion, or is a single parent — led to that project being held up for 2½ years. Only recently, with extra safeguards built in, has the BMA agreed to the pilot projects going ahead.

Dr John Dawson, under-secretary at the BMA, said: "We would never agree to the holding of medical records on a single national system which took control out of the hands of the doctor. On the other hand, it is clearly desirable if one hospital can telephone another where a patient has attended and get the past records from a computer down the telephone line. There would have to be a system whereby access to the information was limited to specific individuals and the hospital would have to be able to check that the request was genuine, but the advantages of such a system are obvious both for the patient and the doctor."

Studies at Leeds over the past eight years have shown that using the programme, the accuracy of hospital doctors' diagnosis of the cause of the pain has risen from 42 per cent to 70 per cent. Similar results have been obtained at Airedale General Hospital in West Yorkshire, and at Bangour General Hospital in West Lothian, and it is hoped to extend the programme shortly to a further eight to 10 hospitals in Britain finally to prove the system.

It works, in part, by forcing the doctor to ask all the relevant questions and make the examinations necessary which are then checked off on a sheet and fed to a computer.

The computer then compares the case with 6,000 others, collected from around the world, far more than could be within any one doctor's experience — and offers predictions of the diagnosis. This is only delivered after the doctor has offered his verdict.

The result is not only a better diagnosis, but a marked decline in unnecessary operations which not only save money, but reduce risks to patients.

Dr de Dombal emphasizes that the computer only provides advice — the doctor makes the final decision. "What we have effectively done is put the experience of 500 doctors from around the world into a small box," Dr de Dombal says. "If you do that, the small box is going to get pretty good after a while. All that experience is available to the doctor trying to diagnose acute abdominal pain in the middle of the night, and if that doesn't help him, probably nothing will."

With the aid of the computer, junior doctors, once trained on the system, can bring their diagnostic accuracy up close to that of an experienced doctor within a few weeks.

Dr de Dombal says that in the next decade, if all goes

well, such programmes could become fairly commonplace in general hospitals, covering perhaps 10 per cent to 20 per cent of medicine where the problems can be clearly defined. "There are whole areas of medicine, however, that are never going to be covered by the sort of programmes. The areas where medicine is still a much an art as a science and you are relying on the judgment of a shrewd consultant."

The equipment necessary to run a programme such as that for acute abdominal pain costs about £300 now, against £250,000 1½ years ago. If hospitals adopt computerization on a large scale, however, the software could be easily tailored to fit into a system that would also run patients' administration, records and the other services a hospital needs.

£30m spent and little result

Although item such as payroll have been computerized in the NHS for as long as they have anywhere else, the more medical and experimental side of NHS computing has a rather sorry history.

Many of the first 15 projects for patient administration set up by the Department of Health in the late 1960s ran into serious trouble. Some £30m was spent in a decade with little tangible result other than harsh criticism.

The DHSS, apparently once bitten, became cautious about further experiments, and in 1980 the chairman and three leading members of the department's computer research and development committee resigned. They warned that Britain was falling behind in the use of computers in hospitals and primary care, and balked particularly at the refusal of the department to back two particular projects.

One, that is still a live issue, was to computerize the work of family practitioner committees, who maintain registers of doctors' patients and pay the family doctors. The other was to speed £2.5m over eight years, installing comprehensive computer system called Promis at the Royal Free Hospital, in London.

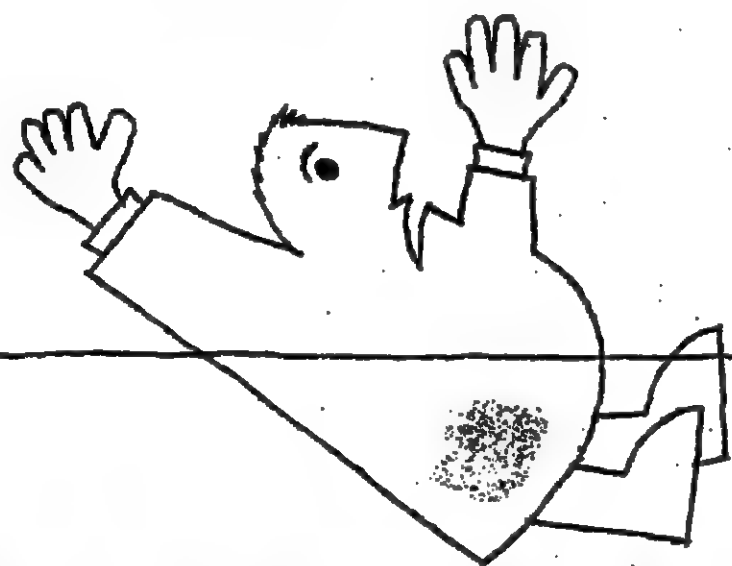
That system would virtually have run the hospital. Patients' records would have been computerized, admissions and discharges handled, and laboratory tests stored while the stocks, costs, uses and interactions of the drugs in the hospital's pharmacy would all have gone on the computer, complete with a virtual textbook of medicine which in theory would have provided instant teaching and better diagnosis. The system advocates maintain that a running costs as an experiment would have been roughly matched by its savings — perhaps £25,000 a year in saved paperwork, and 15 per cent or £180,000 a year of the drug bill, plus all the benefits of improved efficiency and fewer lost notes, test results and the like.

It was, however, ended down. The dust from the signatures is only now settling, and while the advocates of Promis fight on, a new NHS Computer Policy Committee is getting underway to decide the expansion of computing in the health service.

Some of the early experimental projects that survived are now producing good results, and Mr Gordon Roberts, chairman of Oxford Area Health Authority and chairman of the new committee, says he is impressed by the amount of work that has been done in NHS computing.

The problem is standardization. As yet the committee has no budget. When it gets one it seems unlikely to support "turnkey" projects for complete computerization of hospitals. Rather it is looking for the development of compatible packages.

Nicholas Timmins



# Have you recently found yourself becoming an involuntary non-profit organization?

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**Data General**  
COMPUTERS



## A child shall lead them and late starters follow

Children respond extraordinarily well to information technology. As IT Minister, Kenneth Baker said: "they are my best fellow missionaries" in spreading the IT gospel.

Anyone who has seen a 12-year-old computer wizard programme a ZX81, or even a three-year-old playing with an electronic toy, will know just what he means. So will teachers who have been taught computing by their pupils at sixth-form seminars — an increasingly frequent occurrence, according to Mr Baker.

No, the problem of introducing IT into education is not acceptance by pupils or students. They love to get their hands on a computer keyboard and learn remarkably quickly how to use it. The barrier is mainly financial — the shortage of money to buy hardware and software.

But there is also a human obstacle in the shape of certain school administrators and teachers who quietly oppose computerized teaching aids, partly out of a sincere belief that education will suffer if the human element is reduced, and partly because of

the general Luddite reaction to new technology which you do not understand and which may threaten your job.

The Government is trying to reduce the financial barrier to the educational application of IT, through schemes such as the recently introduced Micros in Schools programme. Many private individuals and industrial companies are also giving schools and colleges financial aid to introduce new educational technology, or lending or donating the equipment itself.

The human problem is not so simple to solve. The Government is doing its best, by supporting microcomputer courses for teachers through the £9.5m Microelectronics Education Project.

But what is really needed is a revolution in basic teacher training. Mr Baker would like "to move to a stage where every teacher going through a teaching college has a period of two or three months learning where the micro fits into the educational process". Unfortunately there is no sign of that happening yet.

### Micros

Britain has two schemes to put a microcomputer into every secondary school. Under the official Micros in Schools programme, the Department of Industry has approved 1,900 applications for 50 per cent funding towards the cost of a microcomputer. And micro entrepreneur Clive Sinclair claims to have signed up 2,300 schools for his alternative scheme which expired in December.

Mr Sinclair sold any secondary school his ZX81 micro with a 16K (16,000 character) add-on memory for £65 — half the normal price. He launched his own scheme after the Department of Industry excluded the Sinclair micro from its official programme. The Government offers grants towards the purchase of just two models, the RML 380Z sold by Research Machines of Oxford for £1,680, and the BBC Microcomputer made by Acorn of Cambridge (£250).



First steps in computer technology. Schoolchildren often adapt better than their elders to complex innovations.

When the Government scheme was launched last June, it was restricted to the 2,500 to 3,000 secondary schools thought to have no computer equipment at all. But from this month the grant has been extended to schools that do already own computers.

Although Kenneth Baker is confident of reaching his goal of putting a micro into every secondary school by the end of this year, that achievement will not be much more than a symbol of the need to bring education into the IT age. For a single computer in an average high school will allow only one hour's use per pupil per year.

Progressive local authorities are therefore investing more of their scarce funds in additional computers, to give all pupils significant "hands-on" experience. And particularly imaginative authorities are linking together the micros in several schools, allowing them to share their databases in a network.

One example is North Tyneside Borough Council. It feels that a network is the only way to provide the large amount of data storage that is required if the computers are to be used across the whole curriculum. Otherwise, the council feels, "there is a tendency for mathematics and science departments to retain the system for their use, and teachers in other subjects can be unhappy about using a system that is felt to require knowledge of advanced mathematics."

North Tyneside is considering the possibility of using the local authority mainframe computer to provide mass data storage for all its schools. The problem is that the data would have to be transferred fast when a school needed it. Ordinary telephone lines are too slow and special data lines too expensive, so radio transmission is being investigated. The council says the main difficulty is obtaining Home Office approval.

### Job training

The Government has received much publicity recently for its decision to set up 20 national chain of about 20 Information Technology Centres, to give unemployed school-leavers training and work experience in microelectronics and computer skills. They are based on the Notting Dale Technology Centre in London, which has trained about 60 teenagers

over the past three years, including several West Indians with no formal qualifications, and — most importantly — placed them in IT jobs.

However the National Computing Centre had already proved that unemployed school-leavers can be prepared successfully for careers in IT, through its so-called Threshold Scheme. In 1981/82, the sixth year of the NCC scheme, it will provide opportunities to 1,470 to 19-year-olds, at a net cost to the Manpower Services Commission (the sponsoring agency) of £3.1m.

Although all Threshold Scheme applicants are unemployed school-leavers and there is no minimum qualification, candidates are interviewed and tested for a whole day before they are accepted. (The four written tests examine general reasoning, spatial ability, clerical speed and accuracy, and observation and clear thinking.) So many youngsters have come forward that only one in five has been taken on.

Successful candidates spend a year on the scheme, combining classroom teaching (in any of 60 colleges of further education) with practical experience of computer operating and programming in industry. "At first it required considerable effort to persuade employers to take part in the scheme," said George Penney, the NCC's careers projects manager. "There had never before been anything like an apprenticeship in data processing."

Gradually employers warmed to the course and began offering jobs to the trainees placed with them — youngsters they would previously not have dreamed of employing because they had no academic qualifications.

On average, over the first five years of the Threshold Scheme, only 10 per cent of starters dropped out before the end of the year. And 90 per cent of those who finished the course had found a full-time job within six months.

In educational circles abroad Britain has three world-famous institutions: Oxford, Cambridge... and the Open University. Few people in this country realize how much educators elsewhere, and particularly in North America, envy and admire the OU. They see it as one of a handful of bright sparks within Britain's overall reputation as an international failure.

The Open University's importance within the general story of IT lies not in the technology it uses — there is nothing especially novel about that — but in its pioneering role in the development of "distance learning". It was the world's first university founded to deliver higher education to the homes of people who did not have the time, the money or the inclination to go to a traditional institution.

Distance learning is going to be education's great growth area in the years ahead, and the intelligent home computer/information terminal will obviously be an ideal medium for it.

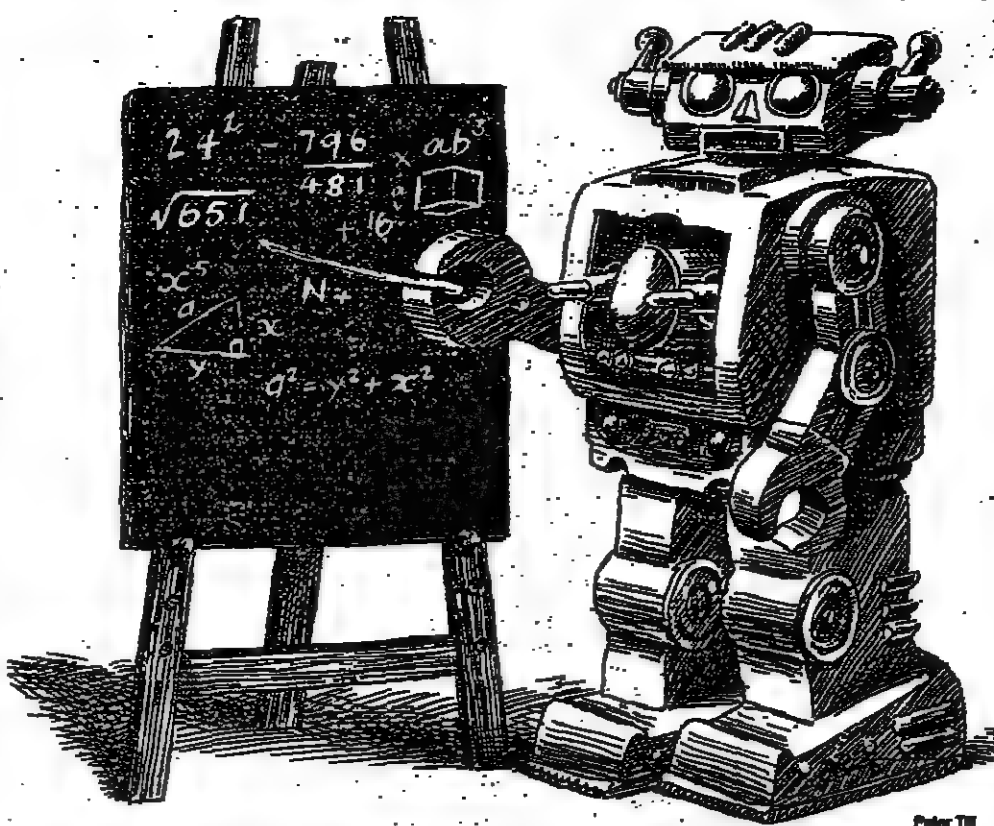
But in these primitive days the Open University relies mainly on written course materials sent to degree students through the mail. The BBC television programmes, the glamorous side of the OU, are only a supplement, albeit an important one, to the basic texts. They are also supplemented by tutorials, sometimes over the phone, and by an annual summer school.

Recently the OU has been expanding its continuing education activities. Several non-degree courses in the field of IT are now available for professionals who want to update their skills.

One example is "Microprocessors and Product Design: Course for Engineers". It is a 150-hour self-paced course for engineers and designers who are considering the introduction of microprocessors in their products. It includes extensive practical work on a microcomputer system supplied by the OU. The full course package costs £395.

North American is geo-

graphically fertile territory for distance learning, because it has many very isolated communities. But the development of an American open university has been inhibited by the fact that for many years its traditional colleges and universities have enrolled a far higher proportion of the student-age population than on this side of the Atlantic; the United States does not have the large pool of intelligent men and (particularly) women who had missed the chance to obtain a conventional degree and who are the prime



Peter Tilt

targets of the OU in Britain.

Nevertheless several events in the past year have encouraged the many American OU supporters. Most important was a \$150m gift to the Corporation for Public Broadcasting from publishing tycoon Walter Annenberg. The money is to be used to produce higher education courses which will at first be broadcast by conventional radio and television but may later be disseminated by new communications technology. Some of the Annenberg funds will be used to develop

new techniques for distance learning, including video-discs and interactive cable television (which would allow the student viewer to respond to the teacher on the screen).

Another encouraging event in the United States was the recent inauguration of the country's first nationwide distance learning project. The National University Consortium as it is called, started on a small scale with a network of seven universities and seven local television stations, and courses bought from the British OU (which has an office in New

York). It is hoping to win more funds for expansion from Mr Annenberg's gift.

Distance learning is further advanced in Canada, where Anik satellites are beaming educational programmes to remote Eskimo villages in the vast Arctic wilderness. Several Canadian provinces are starting their own open universities; the latest is British Columbia's Open Learning Institute, which is being set up with assistance from Britain's OU.

Clive Cookson

## Robots to the rescue....?

The industrial revolution now taking place in Japan, the United States, some European and other countries was made inevitable, it can now be seen, by the rapid developments in microelectronics during the past decade. To an important degree the application of these developments to industry has been characterized by the manufacture of microprocessors which has opened up an almost unlimited prospect for the automatic transfer of engineering data to management control. But although the fundamental technology has been available for some time it is only now becoming a feasible industrial application as the cost of electronic control devices begins to fall and their reliability and power increases.

The stages of progress in industrial automation can be seen clearly in the development of machine tools. In the past 20 years there has been large-scale adoption of numerical control (NC) machines and more than 40,000 have been installed in Britain. The next stage was to link together a number of NC machines through a data transmission network to produce direct numerical control (DNC). A further stage was to bring together a number of machines under a single computer numerical control (CNC) system.

The addition of robot-controlled transport of work from machine to machine then gives rise to a flexible manufacturing system (FMS) in which the replacement of operators by a central computer control can lead to an unmanned workshop of the kind now operated by Fujitsu Fanuc in Japan. In November 1980, Fanuc, the world's leading manufacturer of equipment, opened a factory near Mount Fuji in which industrial robots, controlled by microcomputers, produce other industrial robots without human intervention.

The Fujitsu Fanuc plant is the world's first factory to be unmanned except for minor machine operations and administration and it has naturally astonished visitors, but similar advances are now being made by the United States, France and West Germany. Britain, too, is to develop an FMS through the recently announced partnership of the machine tools division of Tube Investments and Taylor Hitec, a specialist robotics company.

Commenting on what will be Britain's first venture into FMS, Professor Robert Bell of Loughborough University said: "There is just time to put this right in Britain. We have five years to put it all together or our manufacturing industry will go into accelerated decline."

There can be no doubt that that warning was needed so

continued on next page

PHILIPS

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## Taking the slog out of office routine

This article has been written on a piece of electronic equipment, a word processor, that makes my electric typewriter as out of date as a quill pen.

When I make mistakes, my ET 121 corrects them... well I press a button to correct them instead of using a rubber.

Talk with any secretary and she will usually say that Information Technology has taken the routine, monotonous chore out of her job and just as the golf ball typewriter was the perquisite to entice secretarial talent, now it is electronic text editors or word processors.

The cost effectiveness of word processors may be questioned, but for the user there is no doubt that office technology can make for more job satisfaction.

A couple of years ago Aline was one of a number of copy typists in the head office of one of France's large regional banks. Her work, she said, was boring, repetitive and her morale was low. "I did not have to think or even look for anything... I just typed exactly what was written out for me, and spent most of the day thinking about other things."

Audrey constantly had to do reports. She works in one of the larger chartered accountants' offices in the City. Her boss constantly changed paragraphs and phrases and sometimes the report was re-typed as many as 10 times. "The constant repetition and irritation it caused made the office quite sour."

For both of them, their

working life has been changed because of IT. They both agree, however, that they do not need word processors for all their work, but certainly for duplicate letters, standard text work and long reports, it has made their working lives more rewarding, less tiring and physically demanding.

The Civil Service concluded an investigation last year into the economies of using word processors for 30,000 typing secretarial staff. The report said that to justify replacing an electric typewriter with a word processor, productivity increases of between 33 per cent and 72 per cent were required, depending on the labour accommodation and equipment costs.

The report says "mean productivity improvements of

this order were not generally achieved on the day-to-day work by the majority of operations". However, the report goes on to comment that worthwhile improvements in productivity are possible.

As a basis for cost comparisons, word processors were priced between £5,000 and £9,000 against an electric typewriter costing about £400.

The report did suggest that with the "trend towards very stable or even reducing equipment costs and increasing staff costs the cost equation may well change significantly in the future in favour of word processors".

Many managers I have interviewed still complain about the reliability of certain models and the difficulties in getting after-sales

service and maintenance. Two secretaries were frustrated when they could not finish a report because of faults on their word processors.

The International Information/Word Processing Association has complained bitterly about manufacturers concentrating their efforts into selling, but little time being devoted to operator training and after-sales service and support. When the machine goes wrong equipment costing on average £7,000 is lying idle. In addition there is the cost of the operators' time, which in London is averaging £6,500 a year, according to one of the major recruitment agencies.

Some managers feel that the real reason for installing word processors in their companies has been to im-

prove managerial effectiveness rather than secretarial efficiency, and that access to information technology and the harnessing of text editing improves their overall performance.

A recent analysis by Office Management Systems Corporation and Booz, Allen and Hamilton, management consultants, makes boss and secretary more efficient in a number of areas.

However, many secretaries are not certain just how IT can help them do their job better, and they rely on their managers — or the media — to make them more aware.

One of the grievances here is just where to go for positive information and non-biased advice. A secretary who has an IBM golfball typewriter is likely to turn to her IBM salesman for advice; but if she has no machine loyalty then she may find the IT world baffling, with its proliferation of products, prices and permutations.

Conferences and exhibitions like Info 82, the first major IT conference in February at the Barbican Centre, provide an insight into product variety. So do walk-in retailers like the Xerox shops. But many secretaries still complain bitterly of the technical jargon of the manufacturers.

One secretary said to me "I wish they would explain their explanations".

The report to be published soon by Butler Cox and Partners, *The Market for Office Technology*, examines

continued on next page



A computer-keeping an eye on stock control.

Continued from previous page

far as Britain's introduction of FMS is concerned. But there has, in fact, been a readiness to employ industrial robots in Britain that seems both surprising and encouraging. It is, officially estimated that there were 500 robots in British industry at the end of 1981. This compares with 1980 estimates of 14,000 in Japan, 3,255 in the United States and 850 in West Germany but it is important to bear in mind that the definition of a robot varies widely.

However, a recent survey by the British Robot Association of 370 industrial robots in Britain showed that they were installed by 140 to 180 users. In Europe only West Germany and Sweden report more users.

Robots are now capable of undertaking a wide range of routine industrial tasks normally performed by human operators. At present

they are used most frequently in such operations as: paint spraying and other surface coating; spot and arc welding; machine tool changing; die casting removal; injection moulding; process machining and general handling.

In a report to be published this month by Inbucan, the international management consultants, detailed case studies of nine British companies show why they installed robots and how they have benefited.

The companies studied were: TI Creds (manufacturers of electrical appliances — cookers, washing machines and kettles). Two RAMP robots, together costing £40,000, operating at the Blythe Bridge factory near Stoke-on-Trent. Employed on spraying heavy electric cooker ovens and panels with vitreous enamel.

Ransomes, Sims and Jefferies (agricultural machinery and grass cutting

equipment). Employs about 1,600 mainly on a single site in Ipswich. Operates one Trallfa robot for arc welding parts of ploughs. Cost of robot and welding equipment £35,000 plus £6,000 for rotary mounting table.

BL. Thirty seven robots operating mainly at Longbridge on spot welding of the Metro body frame.

Laurence, Scott & Electromotors (electric motors and switchgear). One of three Norwich plants is using two Electrolux MHU Senior robots to load and unload a notching press. Cost was £26,000 and the benefits have included improved machine utilization.

JC Bamford Excavators. Employs about 1,500 people on a single site at Rochester, Staffs. An AWP Hal programmable welder was installed in 1979 at a cost of £54,000 and has been employed on some 10 different arc welding operations.

Wavin Plastics (extrusions

and mouldings for the gas, water, farming and building industries). Employs 1,000 people at sites in Brandon, co Durham and Ashford, Kent. Two Unimate 2000 robots are operating at Brandon, unloading large plastic injection moulding machines. They cost between £40,000 and £50,000 each and, operating for 24 hours a day, seven days a week, they have led to significant improvements in the utilization of expensive injection moulding machinery.

Metal Castings (Worcester) (diecastings for the automobile and other markets). Employs some 600 people. The company has pioneered the use of robots for diecasting in Britain. Six Unimate 2000B machines in operation installed at a cost, including automation and micro-processor controls, of £750,000.

Langling, Bagnall (electric forklift trucks). The company has a Unimate Puma on

the point of starting production at the Basingstoke plant. The cost is £30,000 and the robot will be employed to arrange electrical wire into a loom configuration for use in the control circuits of forklift trucks.

WCB Clares (trolleys, baskets and shelving systems for shops and supermarkets). Employs 245 people at Wells in Somerset. In 1977 an ASEA IR66 was installed for arc welding side frames for stacking trolleys. Two more were bought later and a fourth robot is at present on commissioning trials. Cost of the first was £57,000 and the next two cost £45,000 each. The fourth will cost £37,000.

Quite apart from the specific benefits obtained these case studies demonstrate that robots can be employed successfully in medium-sized and small companies.

Another important group of techniques which have emerged over the past 10 years and which seems to

have the potential to transform manufacturing industry over the next five years is incorporated in the concepts of Computer Aided Design (CAD) and Computer Aided Manufacture (CAM).

CAD is much more than applied computer graphics or the automation of the draughtsman's office. It incorporates modelling, analysis, simulation, optimization and visualization in designing for production. CAM incorporates the NC, CNC and DNC technologies as well as robotics and automated testing with all aspects of computer-based manufacturing control and procurement.

It is claimed that CAD and CAM, when linked together, not only improve design and manufacturing technology but also the efficient management control of the business, especially when they are integrated through a database system. CAD/CAM tech-

niques have already been used in many industries in Britain and abroad. They include electronic, mechanical and electrical engineering, ship design, building and the offshore industry, ceramics, glass, furniture, fabrics, cartography, mapping, land management, civil engineering and the design of office layouts.

In stock control, too, computers are already playing a major part. Hepworth, the British retail clothing chain, have installed a system to replenish their shops daily after sales details are transmitted to the head office computer in Leeds. But the technique in Japan is even more advanced. There, the computerized stock-control system is called Kanban which, roughly translated from the Japanese, means "just in time". The system is so tightly organized that Western observers have been amazed to see the minute

stock levels carried by such companies as Toyota.

Although the use of robots has so far been concentrated in manufacturing, other important growth areas are appearing. These include marine development, nuclear industries, medical and hospital work, transportation, agriculture, forestry and construction. A public service which is likely to be robotized in the future is firefighting and it is expected that domestic cleaning will be eventually carried out by robots. In construction, the erection of steel structural frames and the cleaning and painting of bridges and buildings are all likely to be assigned to robots.

"Industrial Robots will be available at £90 from Inbucan Management Consultants, Knightsbridge House, 197 Knightsbridge, London SW7 1RN.

Alan Grainger

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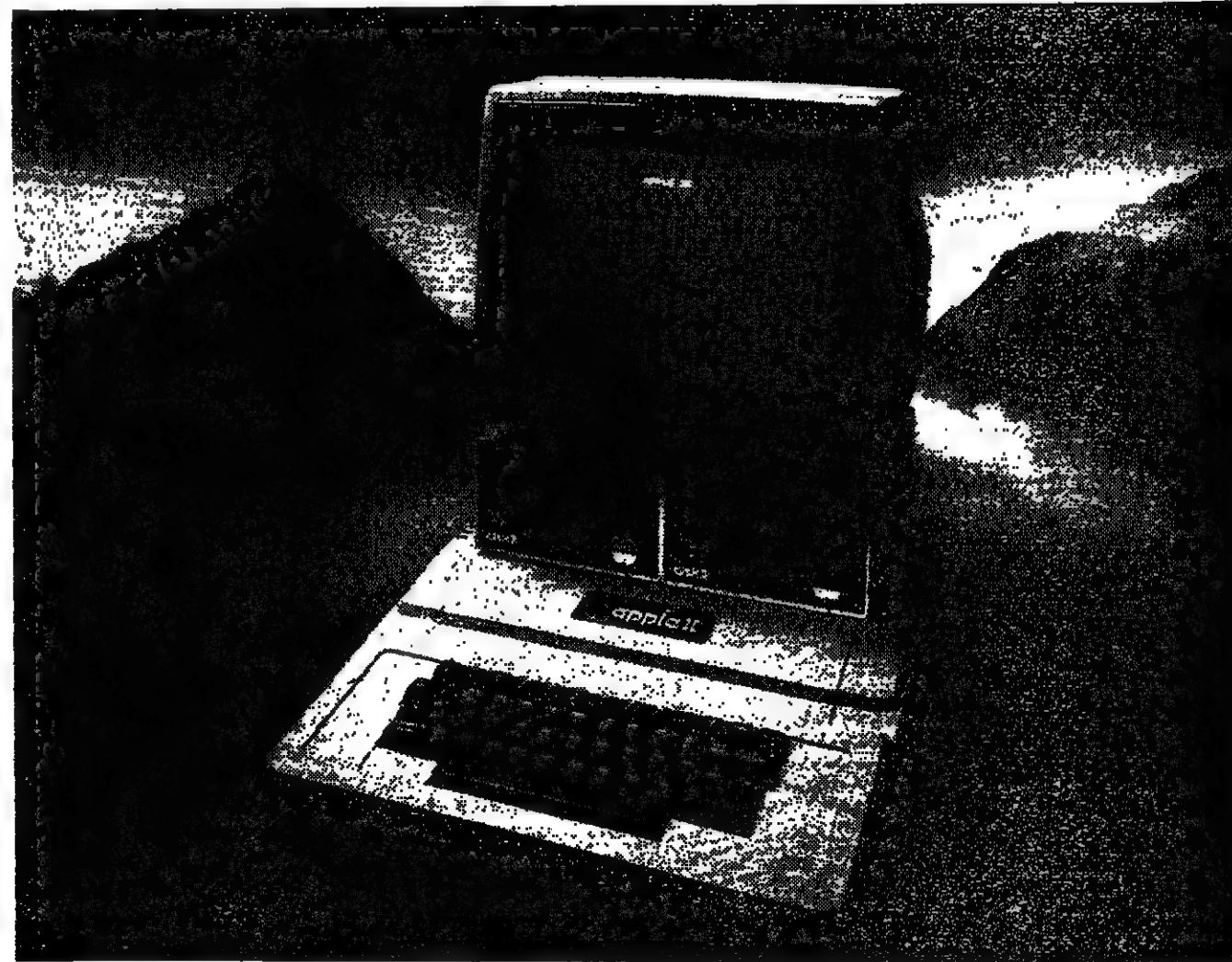
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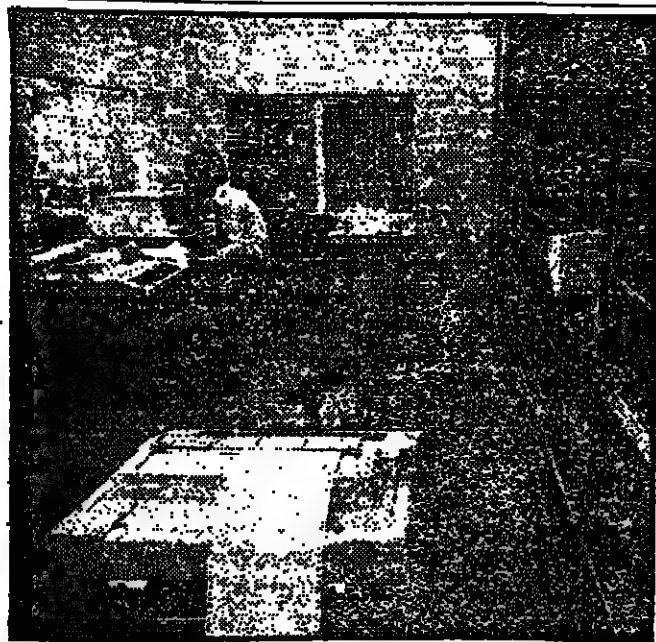
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the personal computer



# Fine words do not a telephone system make



Computers used for robot control in an oil refinery

continued from previous page

individual equipment, its costs and its characteristics. This report, funded partly by the Department of Industry and partly by subscribing companies — which includes British Telecom, ICI and Rediffusion — summarizes the experience of some 17 organizations from an analysis of their business problems, the opportunities for word processing and the management objectives for office technology.

The report indicates that there is tremendous scope for IT as a means of improving efficiency in all areas of secretarial and support functions such as accounts and finance, personnel, payroll, sales, marketing and distribution, production stores and procurement. But the major problem for many companies is still "where do we begin and how?"

□ □ □ □

This year Xionics, a small British computer company, installs an information system in the Cabinet office, Whitehall. It forms one of the "office of the future" projects, demonstrating advanced office systems, planned by the Department of Industry.

According to Mr Kenneth Baker, the Minister, these projects are "particularly good examples of intelligent public purchasing, allowing the public sector to show that information technology can create greater efficiency and improved service at lower costs, while at the same time providing manufacturers with real working office environments in which to test and evaluate the operational efficiency of their advanced equipment."

## The IT equipment in the office

Copiers/duplicators  
Word processors  
Fax/intercoms/message switching  
Teletext/videotext  
Data processing terminals/personal computers  
Audio dictation  
Telex/teleprinters/facsimile  
Micrographics  
Electric/electronic typewriters  
PABX/data links  
Central computer system  
Accounting/invoicing machines

The advanced equipment which Xionics is developing is known as a local area network (LAN). It is a system which can link together a myriad of computers, word processors and other electronic equipment to form an inter-office or inter-factory network. The company has, in effect, developed a device which allows all parts of the network to talk with one another.

According to the managing director, Mr Michael Bevan, managers in the past have "over-exercised their freedom of choice". Their selection of office equipment ranges from VDU, Prestel, Herald telephone systems, to mainframe and desktop computers and word processors.

The products usually come from different manufacturers and can often be incompatible. The customer can get frustrated when one machine breaks down and work cannot be handled by another.

The network overcomes this incompatibility. It can convey messages, transfer electronic mail and retrieve data from other computer centres or data banks. It should enable the Cabinet Office staff to get a report on the visual display unit within seconds.

Mr Bevan hopes his network will prevent the acid-vision that seems to occur within some offices using IT. One of the major complaints concerns the lack of the resilience and reliability of IT products. If a part does break down it is important that the system is still able to carry on. When this does not happen users return to the old methods of working, resulting in an increasing antipathy towards the new system.

With good information technology, managers in such areas as marketing, research and development, design, finance and sales, are able to gain immediate access to relevant accurate information on sales, production and marketing trends.

Mr Tom Elliott, managing director of Unilever's UIMC, sees IT as being particularly important in making an executive's time more effective. For instance, simple and

routine inquiries about prices, delivery and stock control can be accurately handled by the technology, allowing the manager to concentrate on areas "that require judgment, like future business strategy, market place competitiveness, new products".

He feels that just as it is wrong for a housewife to slave over a washing machine, it is also wrong for a manager to slave over routines when IT can take the "humdrum" out of the executive's life.

It agrees that once "compatibility" and "resilience" problems are eased, and standards are established along the lines being sought by the recently formed Department of Industry Focus Committee, then managers will find less irritation when working with IT products.

In a straw poll of managers, all say that the major change in their job as a result of IT and desk top power, is the instant availability of information which allows them to speed up their decision making — that is if they have properly thought through the question "what information do I really need, and in what form?"

In December, I. P. Sharp Associates, an international computer-communications service, offered an entire international business data base for large companies, which covers economic and demographic data on 130 countries since 1960. This means that users — at present some 3,000 world corporations — have access from 300 cities, via a local telephone call, to a system of data, including the United Nations monthly Bulletin of Statistics, OECD Economic Surveys, and IMF financial information.

In principle this means that an executive could work from home. But there is a reluctance to relinquish the office desk in favour of computing. One businessman said that working at home was too isolated compared with the office.

According to a recent survey there are 1,700,000 separate "offices" in Britain, compared to the previously published figure from the Census of Employment 1976 which made it only one million.

The survey undertaken by Industrial Market Research Ltd (IMR), a uniquely detailed picture of British office equipment market, covering products, service areas and information technology.

The 1976 Census was known to have achieved poor coverage of smaller office establishments — a comparison of the IMR results with those from the Census estimates for the 10 to 99 employees group of 350,000 establishments (against 250,000 from the census) and for the one to 9 employee group, 1,200,000 office establishments compared with 750,000 in the census.

Through the IMR survey we now know that one in three of the working population work in offices (7,500,000 out of 23,500,000) and that 95 per cent of work places have less than 50 employees and these establishments account for nearly half the total working population.

The Institute of Directors, which prides itself on serving the interests of the smaller businesses, admits that the subject of IT has a reputation for being technical and forbidding which tends to discourage the businessman from taking full advantage of IT. In its booklet *The Director's Guide to Computing* (published by the Institute this month, price £1.95) it sets out to tame the complex area and offers straightforward guidance to Directors to help them evaluate the many options for computerizing their businesses.

According to a report to be published in 1982 by Butler Cox Partners (The Market for Office Technology Small Business Study) it endorses the viewpoint that UK smaller businesses have tended to adopt a motto "if it works leave it alone".

"The market is mainly ignorant and unimaginative rather than non-existent... it is hard not to crack but an impossible one."

Lynda King Taylor

\*\*The Focus committee was established in 1981 by the Department of Industry on IT standards, to coordinate all British national and international standardization activities in computing and communications. Mr Michael Marshall, Parliamentary Under Secretary of State for Industry, is chairman.

"I believe that the future prosperity of Britain depends on our being bang up-to-date in the latest technology, and preferably one step ahead of other countries". That is what Mrs Thatcher said, in a specially-recorded video tape interview, at the launch of IT82.

Fine words, but they are in any objective person's terms impracticably optimistic. Britain's present telephone system is a disgrace, by the standards of "other countries", even its computerized exchange, System X, that should shortly be coming into service, draws jibes from foreign engineers that the reason for the "X" is that British Telecom has still to decide what form it will take. Add to this an Administration that does not practice "interventionism" to help its industries join the cut-throat world of high technology, and a populace that seems indifferent to science and engineering, and what lies behind the fine words?

It is a big question, and one way to break it down into manageable proportions is to look at what government departments are spending on information technology. That leads to some more specific questions; for example do the most advanced firms get the contracts, or are they going to companies with traditional or "old boy" ties with government? Are buying decisions made by people with knowledge and experience of the information technology industry, or are they bureaucratic in nature? Is there enough cash being allocated to do the job properly, or is it the traditional cry "that is all we can afford; you'll have to do the best you can"? And will this spending have the desired effect — to make Britain genuinely competitive.

## The Department of Industry

The DoI is the biggest spending and sponsoring agency in information technology. It acts as host to the Information Technology Division, and has the only minister responsible for IT. The DoI plans to spend £80m over the next four years, "to help research, develop and manufacture new products and processes in the IT field and to raise awareness of IT in all sectors of the community". This money is, in addition to several hundred millions more, spread over up to eight years, and distributed between a wide spectrum of companies, government laboratories and

consultants. It also includes some spending that comes under the Ministry of Defence.

But although this list of money sounds impressive, it needs careful examination to put it into perspective. One quarter of the £80m allocated to information technology will in fact go to promoting the subject over the next four years, and film of that is being spent on promoting IT82. Less than £2m of the remainder has yet to be committed to new projects and those that do have price tags connected (setting up microsystems centres, an exports advisory committee, and bolstering the micro computers for schools programme receive individual grants).

The microsystems centres — whose aims will be to offer training and export skills in using microcomputers for "businessmen and others" — will get £600,000 from the Government to match the similar amount provided by the National Computing Centre which set up and runs them. The export committee, whose role will be to improve the sales overseas of British IT products, will cost £250,000 for the one year it is due to exist. And the micro-for-schools project, started last June, has a notional upper limit of £4m, though the DoI says it has not yet worked out how much it spent on the 2,000 or so applications it has processed.

The DoI's biggest expenditure to date has been the Microprocessor Applications Project and its sister the Microelectronics Industry Support Programme, MAP,

which is due to end this year. MAP's main role has been to support firms, to help people become aware of microelectronics, to help pay for consultants, to design systems for them and to pay in part for the hardware and software they designed. MAP's administrators have spent more than £45m so far.

MAP's next biggest outlay of cash seems likely to be the information technology centres it is just starting to set up. These will train unemployed young people in microcomputer technology and give them the experience of computing that the Government thinks is vital to getting a job these days. Each centre cost £2m and just before Christmas, Kenneth Baker announced that the DoI will set up 100 of them.

The DoI's other key projects are Office Automation projects (11 pilot projects have been proposed at a cost of £500,000 each); a scheme to make industry aware of the advantages of computer aided design and manufacture; (£5m over three years) another parallel project to encourage robotics in industry (under which interested manufacturers will get grants to help them assess and install automatic manufacturing machines); and a scheme to encourage industry to build up skills in optical fibre communications cables and the terminals needed to convert these into complete telephone or data transmission networks. This scheme will cost £25m over five years and is intended to focus on novel technology.

## Civil Service Department

Until it was merged with the Treasury recently, the Civil Service Department was charged with the responsibility for keeping the Government's bureaucratic machinery up to date. In practice, work falls to the Central Computer and Telecommunications Agency (CCTA).

In addition to advising the Government on which computers it should buy for the Inland Revenue, the Driver and Vehicle Licensing Centre and the Customs and Excise, it tackles more human tasks such as running trials of electronic typewriters and portable devices for feeding data into large computers and operating a workshop in which novel microelectronics hardware, and the software to go with it are developed by experts working alongside the inexperienced people who will use the systems.

The CCTA's latest task (announced by the then Minister of State for the CSD, Barney Hayhoe, last November) is to investigate what government will need in the way of "administrative telecommunications" over the next 10 years. This piece of jargon means "all the cables, exchanges, word processors, and computer data bases that are needed to build a modern electronic office network. The fact that the CCTA is only doing this study now, although it has been running its micro-workshop for four years might seem like designing the stable around the horse but at least it gives some hope that the problems of supplying the complex infra-

structure of government may be thoroughly studied.

## Home Office

The Home Office's involvement with information technology is limited to its role of custodian of the nation's moral and legal standards. The lack of data-protection legislation in Britain is said to have become a foreign company's starting up business.

## Ministry of Defence

The MoD is by far the largest purchaser of electronics in Britain, but little of it falls into the category of information technology. What does are the communications systems that it uses to handle classified information. These operate to international (Nato) standards, moving coded information from one computer to another. They bear little resemblance to the kinds of equipment that people will be increasingly using in their homes and workplaces, though some of the advanced electronic components in military equipment could be passed on to civil firms. This tends to happen in the United States, but not in Britain, with the result that Britain's high level of spending on military research and development (55 per cent of its total R & D budget) does not provide any subsequent benefit to its industry or its people.

John Stansell  
Technology Editor,  
New Scientist

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## Push-button shopping arrives



Computers in the home: the use of computers holds no fears for the young, many of whom are now using computers daily at school. The machine being used here by an 11 year old is the newly-launched VIC 20 colour computer. More than 18,000 have been sold since the launch in October.

Generally the home with a suitably adapted television set has a choice of two videotex information services. There is teletext, broadcast by the BBC and ITV, and there is videodata provided by British Telecom through telephone links.

One of the basic appeals of computer-based videotex information is that it can be updated rapidly and cheaply by the sender. Print-out attachments can be fitted to receivers.

There are believed to be 250,000 to 300,000 sets either purpose-built or linked to an adaptor to receive teletext. The BBC calls its product Ceefax, that from ITV is Oracle.

When British Telecom's own videodata operation, Prestel, opened a little more than two years ago it expected to compete in the mass market with Ceefax and Oracle. But so far it has attracted only about 15,000 clients, and has shut down some of the computers which were ready to meet the information explosion.

Since both systems provide a similar service, information in printed and computer-graphic form thrown on the television screen at the touch of a few buttons on a keypad, the discrepancy in public response looks strange. But there are a variety of reasons.

### Long cord is required

The principal one is that teletext comes free, like other television programmes, although the BBC says cautiously "not at the moment" when asked if an extra licence is required for Ceefax. ITV takes advertising to pay for Oracle. The only cost to viewers is that of buying a new set or an adaptor to receive broadcasts.

Prices vary, but a trade spokesman suggested a 22-inch full remote control television set, normally selling at about £350, might rise to £450 to £475 for Ceefax and Oracle. With Prestel as well the price could be £575-£600. Adaptors for an existing set of the same kind, he said, would range from £200 to £250 for teletext, and from £190 to £230 for Prestel. At present, a separate adaptor is needed for each of the two services.

Prestel, in addition, incurs a fee which shows up on the telephone bill. This may be no more than the cost of a local call while the set is in use, but there can be additional charges for access to some information. The caller is warned of these before he keys them in.

There are other physical and psychological influences at work. Few people place their television set where it is easily linked to the telephone, so in many cases a long cord is required.

Women and children tend to control the television switches in the average home. Fathers are unwilling to give their children use of what could be an expensive toy (each Prestel user has his own pass-code). But it would be a bold husband who insisted on calling up the racing results when his wife was watching *Coronation Street* or *Wimbledon*.

It is probably for these reasons that some 90 per cent of Prestel sets are installed in offices. Very likely many home sets as well are owned by businessmen who cannot sleep without knowing whether Wall Street was panicking at the close of business.

However, the potential of Prestel far exceeds the capacity of television systems. Currently it can call up 200,000 pages of information, although many of them are highly specialized; they include case histories for lawyers and a few sentences about various trade unions, including my own.

If there were more sets installed, the number of organizations supplying data to Prestel, called information providers, would rapidly in-

crease from the 700 listed at the end of 1981. Organizations interested in contacting a broader audience would also be attracted to the service.

Users can put information into the system as well as take it out. The ordinary numeric keyboard can convey a limited range of messages to another subscriber; with a full alphabetic keyboard detailed communications can be sent. In two or three years British Telecom expects to have Prestel 2 transmitting pictures of full colour photograph quality.

Already armchair shopping for a limited range of goods is a possibility for anyone equipped with a Prestel set and a credit card. Debenhams' and W. H. Smith were among the first to develop this outlet. Goods are ordered by filling in a page form through the keypad and giving the credit card number. They are delivered to the registered address of the customer.

Home shopping could be the locomotive to get Prestel really moving in March, when the Gateway service is introduced in London, later to spread nationally. This will allow a receiver, at present limited to the system's own computer, to contact external computers anywhere in the country through the Packet Switched Service, British Telecom's public data network.

So, for example, it will be possible for customers to dial direct to a mail order firm's computer, or make airline and holiday reservations, having first checked that tickets are available (tourist agencies are already heavy users of Prestel). Gateway could also introduce banking transactions from the home.

There could be equally far-reaching effects in actual information retrieval. Technically, a scholar might study manuscripts and rare books in remote libraries without

moving from his study. But it could be a long time before the people with the information have it processed in a form accessible to a general service, even if they wished to do so.

However, even with the existing service it is possible for a body providing pages to keep them confidential by placing them in Closed User Groups. They are then only available to other subscribers nominated by the provider of the information.

### Hired for a few pounds more

BBC's Ceefax is confined to information, whether news or features. Broadly speaking, BBC 1 carries the spot news, and BBC 2 the magazine material, including consumer advice, and a section of jokes and puzzles. It is possible to combine Ceefax with an ordinary television programme, so that a newsflash will appear in a small box on the screen when important events occur.

Rapid acceptance of the system owes something to the freedom the corporation has to advertise its own service—specimen pages can be seen early in the day on BBC 1 and at various times on BBC 2. As with ITV's Oracle, purpose-built sets can be hired for a few pounds a month more than a conventional television set.

Both share the handicap that transmissions are only available from the time broadcasting starts, for the day down to its close. Also the number of pages is limited, perhaps 400 to 500 between the two BBC channels on a typical day.

The BBC plans to ease this limitation by regionalizing news, and items about weather, sport and entertainment. Oracle, which is owned jointly by all the commercial television companies, has already done this in Scotland.

and hopes to extend local pages throughout the network by 1984 or 1985. There will be regional advertising as well as information.

ITV time worth about £2m is being used to publicize the Oracle service, and interest potential advertisers. There are cheerful forecasts that by 1985 the audience for teletext will run into millions, rather than hundreds of thousands. Advertisements can appear as separate items or as fractions of editorial pages.

Perhaps the commonest complaint from users of both videodata and teletext is the difficulty in using the index systems. It may mean first calling up one or more pages of general index, progressing to a sectional index of several pages, and finally homing in on the particular page carrying the required facts.

Some of this frustration wears off as the user becomes familiar with the numbers of pages he calls up regularly. Ceefax and Oracle customers make heavy use of the sections which tell them about the television programmes they could be watching.

Another problem is that any system takes time to deliver a page. With Prestel it is produced letter by letter as from a high-speed teletypewriter. On Ceefax and Oracle the delay occurs because every page is broadcast in non-stop sequence, and only when the page requested comes round can it be flashed on the individual screen.

All these services are young, even by the standards of an age of white-hot technological revolution, and no doubt such drawbacks will be resolved before the mountain of information turns into a volcano engulfing us all.

Britain has been a pioneer in the applications of videotex, and industry and government have been active in promoting overseas sales.

Patrick O'Leary

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## INFORMATION TECHNOLOGY

## Big plastic spender still needs his wallet

Bankers today speak not of a cashless, chequeless world, but of the less-cash, less-cheque society. With hands on hearts, they say they want to shorten the queues at high street branches, which would benefit them as well as customers.

It is true that what is known as electronic funds transfer is growing, with money passing from one account to another without the use of paper to achieve it. Most people who use cheques have some experience of this; for example through credit transfer, principally in the payment of salaries, or through direct debit of standing orders for meeting bills.

Another technological spender is the plastic card which operates cash dispensers, automated teller machines, or on a small scale so far, point-of-sale shopping. Credit cards can bunch several payments into one cheque, as well as reducing cash-carrying, but generate much paper work along the way.

Standing orders have received a set-back, because inflation means they need constant updating, almost as troublesome as old-fashioned billing. Direct debiting is still recovering from one or two well-publicised disasters in its early days. People are not yet fully reassured by fervent protestations that they will be notified of changes in the figures, and indemnified against mistakes.



Money on a rainy day.

But pressure to switch to this system is growing from the banks' corporate customers, insurance companies and building societies, and some local authorities, as well as secretaries trying to round up subscriptions. Bodies receiving large numbers of monthly or quarterly remittances appreciate a system where money flows after computer has spoken to computer.

Payment of salaries by credit transfer is another area expecting rapid progress. As a nation Britain is underbanked, perhaps only

60 per cent of its earners have accounts, against 90 per cent in many EEC countries. This is largely because most manual workers are paid in cash. Some are being wooed to change, by employers with cash bonuses, and by banks with simpler and cheaper handling of small accounts.

But the first-time account holder is the person most likely to grow disillusioned if it is not just as easy to take his money out as put it in, and he probably hates queuing. So the simple cash dispensers are giving way to through-the-wall banking with automated teller machines.

Most of these can handle requests for statements and cheques to be sent to the holder's home, as well as cash withdrawal within agreed limits. A few also take deposits. During most of the working day a customer can check his current balance.

All four main clearing banks, Lloyds, National Westminster, Midland, and Barclay's are installing such machines at various rates, and Trustee Savings Bank has a similar programme. They can be placed inside branches to relieve pressure on counter staff as well as through-the-wall. In some cases customers can offer their cards at counter computers, tapping in the request for cash under the eye of a human teller. The advantage to the bank is that no cheque has to be processed.

Staff also use desk-top terminals to check accounts, work out currency conversions, and for similar tasks. Some have machines which print out receipts. But bankers would really like to move away from operations which require a multiplicity of heavily-staffed branches. Already cash dispensers can be found in stores and on the premises of large employers of staff.

Point-of-sale schemes, in which the client presents his card at a suitably equipped store or petrol station, have been tried out in several countries. Through a direct link with the bank his account is debited and the shopkeeper credited immediately, provided the funds are available. Britain's big four are cooperating on a joint scheme, and hope that within a couple of years it will be possible to make payments without separate terminals being needed for each kind of card.

### Self-service at home?

The next move could be self-service at home, the customer sending instructions through viewdata. One American banker has suggested it would be economic to lease attachments for television sets at low rentals, eliminating many transactions which entail a visit to a branch. It would be possible for viewers to order cash to be delivered by registered mail, but this sounds like an idea invented by mail robbers.

Prospects are exciting, but in reality electronic payments in Britain are believed to account for less than 20 per cent of all non-cash transfers. The percentage is rising, although the total transactions are also increasing, the cheque mountain does not diminish.

But it is overshadowed by cash deals, estimated to outnumber non-cash by eight or nine to one. It must be remembered that the value of non-cash payments is generally high, but even if the black economy disappears, it will be some time before wallets go out of fashion.

Since 1968 the London and Scottish clearing banks have sponsored the Inter-Bank Research Organization. A large part of its work is to study the application of information technology to financial transactions and monitor its results. Having introduced the machine-readable cheque, banks are pressing for standardization of credit slips.

Electronic funds transfer on a massive scale is carried out by Bankers' Automatic Clearing Services, another product of the main banks. Instead of vouchers, this receives tapes at its City office or Edgware computer centre from firms and other organizations. These contain instructions for payment of salaries, trade bills, and similar transactions.

At the BACS centre debits and credits are micro-filmed for record purposes, then they are stored in the

computer, and distributed in bulk on fresh tapes to the appropriate banks. Limits can be set on individual items, or on totals, so that gross errors are challenged before payment.

In addition to processing tapes the centre expects in about a year's time to be able to take instructions by telecommunications. In such an advanced organization it is a relief to find staff saying that the quickest way to send 15 sacks of tapes daily from the City to Edgware is by van.

Before long banks will have a new instrument for passing money, under which the Bank of England and others will be connected directly to a central computer. This would extend the same-day clearance of cheques, from London to other parts of Britain. In time, it could mean less pressure for all the world's banks to retain an office, however small, in the Square Mile.

Not everyone welcomes rapid transfer of money between accounts. Those institutions most important in urging people to pay small remittances by direct debit, prefer to pay their own bills by old-fashioned means.

This is partly a product of high interest rates. A cheque in the post can represent money in the bank or in the market, earning two or three days' interest. On a large scale this outweighs the cost of manual handling of an account.

While technology can save banks money, using less staff, in smaller premises, and giving scope for new services, it seems likely to bring problems. When every man can sit at home and check his balance, or transfer money in or out of a deposit account at the press of a button, he will soon learn to manipulate his balances to his own advantage. He might take action before slipping accidentally into the red and incurring charges. Inevitably, there will be increased demands for all banks to pay interest on current balances.

### A stream of information

Switching funds and investments is the business of the Stock Exchange, where the offices of dealers, brokers and jobbers receive a daylong stream of information on video screens. Much comes from Reuters, Ertel, and other agencies, but the Stock Exchange has also developed its own system. This incorporates information from agencies with that from the exchange's own sources, the price reporters who tour the floor of the market regularly, and staff who compress lengthy company reports and other business news into a few paragraphs.

The system, known as Topic, is linked to the exchange's central database called Epic, and can be switched to Prestel or, at critical moments in sporting history, to ordinary television channels. Because it is in colour it can reproduce something of the atmosphere of the trading floor, where price rises are marked in blue and falls in red. A practised eye can sweep over a board, or in this case screen, and tell whether the market in any particular sector is going up, down, or dithering.

Its operators say screen fill time is much less than on some other systems, which means when you switch to the page of information of your choice it is completed faster. Another refinement is that half a page can be expanded to twice the normal character size.

Topic operates outside London, although distance adds to the cost of leased British Telecom lines. Some brokers use Topic to provide information available only to their own clients. In a few years they could be keying messages directly into the system for transmission to other nominated users.

In the United States computer-matched stock dealing has been introduced, and some bargains are struck automatically at ruling prices. This can remove large amounts of small orders from manual processing by brokers.

London has computerized settlement of bargains. Tallman, as it is called, processes between 15,000 and 30,000 a day, about 70 to 80 per cent of the business on the exchange. Otherwise about 500,000 pieces of paper would have to be shuffled round the various offices during a fortnightly account.

More modest problems are faced by the shopkeeper and independent businessman, who often feel they ought to buy computers without knowing quite why. To give the beginner a chance to judge for himself the National Computing Centre has established a micro-systems centre in London offering advice and training. The Department of Industry is backing a scheme to open others throughout the country. Retailers have already taken to "electronic" cash registers. Computer-based models are said to be particularly useful in betting shops.

Patrick O'Leary

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The new ICL Leaders in information technology.



# Automatically your valet

Three or four years ago I watched a film produced by a leading electronics firm illustrating how computerised automation could transform life at home. All the gadgets seen, they assured me, were based on existing technology.

Two or three weeks ago I phoned the company and asked about the film. Their information retrieval system proved unequal to the task of finding anyone who could even remember its existence.

Perhaps we are just not ready for a world in which, by depressing a few buttons, you can draw the curtains and check the outdoor temperature before leaping out of bed, run the bath water while scanning the electronic news, turn the toast and the coffee while soaking, and open the garage doors and start the car while taking leave of your wife, who can activate the self-propelled vacuum cleaner while watching breakfast TV.

We are all vaguely aware that micro-electronics have invaded our lives, at the office, when we travel, pay a bill, or go shopping. The airline check-in girl uses a computer to allocate seats. Taxi meters flicker away in one line of computer numbers instead of an array of dials, and pub tills have gone video.

But in the home new technology seems more acceptable if it appears in a familiar guise: improved television and electric organs, more sensitive thermostats to save fuel, washing machines, cookers, dishwashers, and toasters which could use sensors to switch off when the job is done rather than at a preset time. Even the electronic sewing machine is not obtrusively different from its predecessors. In the frightening jargon of the industry, these are "user friendly".

However, we are reluctant to put it all together, so that one computer console, programmed to a particular home's requirements, can control a battery of appliances. At present, the pressure for such simplification comes principally from a section of society least able to pay for it - those who are physically or mentally handicapped.

To a man or woman whose handicaps mean the limit of achievement is to throw a simple switch on and off or press a sensitive keyboard, information technology offers the potential for increased independence and a much fuller and more profitable life. Even the mentally impaired often respond more

quickly than through leaflets and brochures.

There is also some agonising about what is best for people who are at present housebound. Developments in communications mean they can work as secretaries, or computer programmers, for example, from their own homes. But some would argue it is better to concentrate on devices to increase their mobility, and enable them to go out to work as others do.

Introduction of optical fibre telephone cables should expand the services piped into the home. The Department of Industry is sponsoring field tests later this year, in a thousand homes in Milton Keynes and parts of London, of remote-control reading of electricity, gas and water meters. In this case the information will pass through electricity mains, and it will also be possible to monitor equipment to detect leaks, and interference with meters.

Burglar alarms have become highly automated, and some transmit pre-arranged messages to local police stations. It is possible for similar alarms to be activated over the telephone by miniature radios.

An elderly person alone in a house who suffered an accident rendering it impossible to reach the telephone could use a wristwatch-sized radio to call a preset number and alert a relative at work. But radio transmitters are subject to problems relating to allocation of wavelengths, and this idea is still under official scrutiny.

The electronic clock and scoreboard have long been features of sporting events. But the use of automatic line judging at Wimbledon last year opens up intriguing possibilities. Few soccer hooligans would enjoy abusing a robot referee.

Visual arts have not embraced the microprocessor to any marked extent. As for other organisations, it has proved useful in routine applications, booking seats and word-processing appeal letters. Lighting of stage sets has been partly automated.

Instant video-taping means that a performance can be stored for study. The Institute of Contemporary Arts has started a library of tapes for viewing in its premises in the Mall.

Not the least of current problems is keeping those who need the knowledge in touch with what is available in mechanical and financial aid. One of the Government initiatives this year is to consider setting up a database, accessible through videodata television sets, which would provide up-to-date information much more

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Patrick O'Leary

# The IT 82 calendar

## January

Launch of IT trailers by the Prime Minister, NCC, Manchester (15). Which Computer? Show, NEC, Birmingham (19-22). FAST (Forecasting and Assessment of Science and Technology) seminar, Selsdon Park, Croydon (25-29). Microper, Glasgow City Chambers (27-29). BP Oil Computer Centre opens, Hemel Hempstead (28).

## February

Business Equipment and Services Exhibition, Bristol (3-4) and Bournemouth (17-18). Info '82, Barbican (9-12). National Computer Users Forum, Institute of Electrical Engineers (9). Computers and Technology in Education, Cardiff (8-9) and Swansea (10-11). Microsystems Exhibition, West Centre Hotel, London (24-26).

## March

International Electrotechnical Exhibition (Electrex) NEC, Birmingham (1-5). Microshow, New Century Hall, Manchester (3-5). Business World Exhibition, Bristol (7-10). Daily Mail Ideal Home Exhibition, Earls Court (9-10). Daily Telegraph Business to Business Exhibition, NEC, Birmingham (9-11). Oxfordshire Microfair Oxford (11-12). Home Video Show, Cunard International Hotel, London (11-15).



Business Equipment and Services Exhibition, Brighton (17-18). Royal Statistical Society Conference, York (22-26). Institute of Directors Conference, Royal Albert Hall, London (23). Electro-Optics/Laser International Exhibition (23-25). Thames Valley Business Show, Slough (23-26). Audio-Visual Exhibition, Wembley (29-Apr 1). Laboratory Equipment Exhibition, Edinburgh (30-31). Computer-aided Design Conference and Exhibition, Brighton (30-Apr 1). Lasers and Systems for Controls and

Measures Conference and Exhibition, Manchester (30-Apr 1).

Richard Sachs

## April

Chelmer Institute of Information Processing symposium and exhibition, Chelmsford (13-16). Local Area Network Distribution Office Systems exhibition and conference, Tara Hotel, London (14-15). NUT Conference, Scarborough (9-15). All Electrical Show, Barbican (19-21). NUPE Conference, Scarborough (21-27). Institute of Management Consultants Conference, Imperial College (21). Communications '82, NEC, Birmingham (20-23). Tickhill and District Lions Club Marathon, Yorks (25). Booksellers Association Conference, Scarborough (29-May 3). Science Museum IT Exhibition opens (till Aug).

## May

ICL Computer Users Conference, Bournemouth (5). Dudley College, Institute of Data Processing Management exhibition (10-15). Micro-City Exhibition, Bristol (10-13). 1982 Microshow, Wembley (11-13). Welsh Industries Fair, Cardiff (12-15). IT Race Day, Newmarket (14). Design Council Exhibition, Haymarket, London (16-June 26). Shropshire and West Midlands Agricultural Show, Shrewsbury (19-20). Devon County Show, Exeter (20-22). International Word Processing Exhibition, Wembley (25-28).

## June

IT Exhibition, Plymouth Polytechnic (2-4). Impel '82, Doncaster (5-12). Times and Sunday Times Business to Business Exhibition, Earls Court (6-9). EETPU Conference, Scarborough (6-12). Computers in Medicine Conference, Institute of Electrical Engineers and British Medical Association (7-8). London Multi Media Market, Tower Hotel (13-17).

Business Efficiency Exhibition Earls Court (14-18). Electronic Publishing Conference, (14-19). Office Automation Show, Barbican (15-17). Business to Business Exhibition, Cardiff (23-25).

## July

Careers Research Advisory Council Conference, Cambridge (6-9). Design Council Exhibition, Swansea (20-Aug 21). Royal National Eisteddfod, Swansea (31-Aug).

British Cardiac Exhibition and Conference, Wembley (6-7). Strategies for Software Development Conference (7-11). 6th International On-Line Information Exhibition, Cunard International Hotel (8-10). IT 82 Year-end Conference, Barbican (8-9).

The IT stand will be at these exhibitions. Calendar compiled from information supplied by the IT 82 projects office.

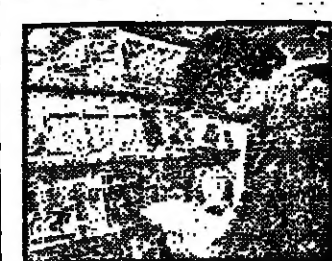
7). Tyneside Summer Exhibition, Newcastle (27-31).

## August

International Scout Camp, Lakeland Forum, Coventry. Evening Telegraph Town and Country Exhibition.

## September

Blackpool Illuminations, (1-Oct 31). International Air Show, Farnborough (5-12). ICC '82, Barbican (7-10). Post Office issues IT stamps, (8). Design Council Exhibition, Glasgow, (15-Oct 30). Media and News in Action, Earls Court, (20-Oct 4). Coventry Junior Chamber of Commerce conference and exhibition, (16-18). 5th International Personal Computer World Show, Barbican (9-12). Design Engineering Show, NEC, Birmingham (28-Oct 1).



## October

Viewdata '82, Wembley (12-14). British Computer Society Jubilee Conference, Queen Elizabeth Hall, London (14). Computers on the Farm, National Agricultural Centre, Stoneleigh (20-21). International Motor Show, NEC, Birmingham (20-31). Wildscreen 82 Exhibition, Bristol (22-26).

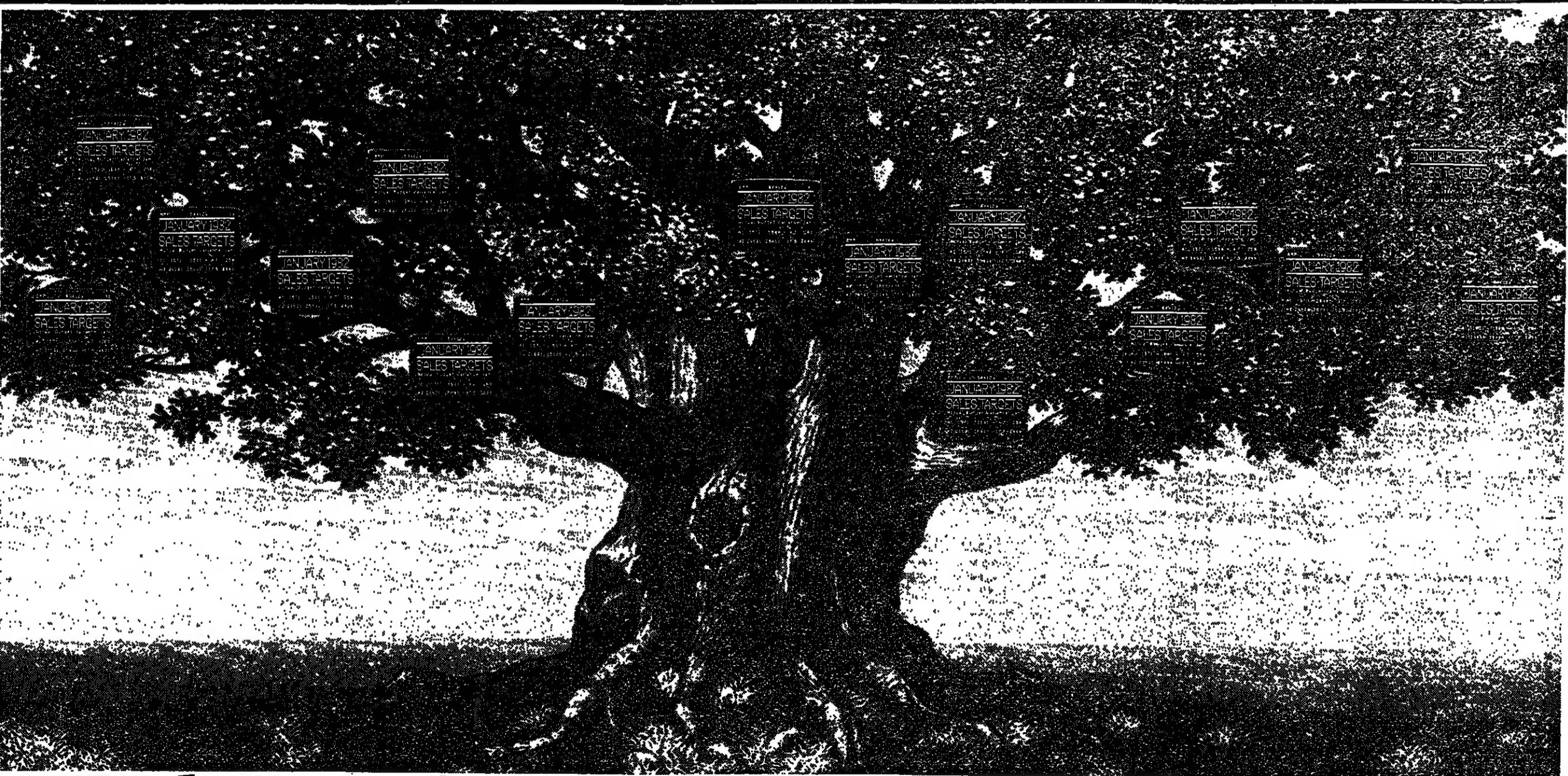
## November

Design Council Exhibition, Newcastle (mid-Nov to mid-Dec). Compet Show, Olympia (16-19). Business Data Processing and Education Conference, Kelvin Hall, Glasgow (23-27).

## December

British Cardiac Exhibition and Conference, Wembley (6-7). Strategies for Software Development Conference (7-11). 6th International On-Line Information Exhibition, Cunard International Hotel (8-10). IT 82 Year-end Conference, Barbican (8-9).

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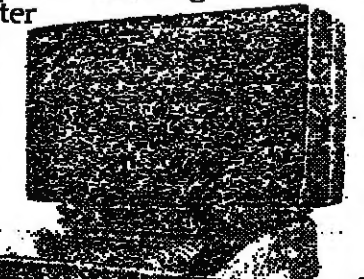
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## INFORMATION TECHNOLOGY

Pearce Wright, Science Editor and Clive Cookson, technology correspondent, consider a future increasingly dependent on electronic information

## Time for a fourth industrial sector

Conventional statistics kept by the governments of the industrial world divide the economy into three sectors of activity: agricultural, manufacturing and services. These figures show the shift over the years from the land to factories and more recently into service occupations by the workforce. In North America the proportion of people working in service jobs has risen to almost six out of 10 individuals.

An important part of this expanding group of workers are people involved in the production, storage, retrieval and distribution of information. According to Dr H. P. Gassman of the Organization for Economic Cooperation and Development (OECD) in Paris, those activities are acquiring a growing importance in the overall production of goods and services.

That view is supported by a new survey of *Science and Engineering Employment* by the National Science Foundation, in Washington, which shows that employment of computer graduates almost doubled between 1970 and 1980, while engineering employment generally increased only 25 per cent.

Against that background a group of experts from the OECD member countries are examining the connection between information technology, productivity and employment. Their preliminary conclusions suggest that it is time for the industrial world to include a fourth sector to the breakdown of economic activities.

But these specialists, who meet as a working party on information, computer and communications papers, are refining a scheme for separating out the "information sector" from the traditional three across which it cuts.

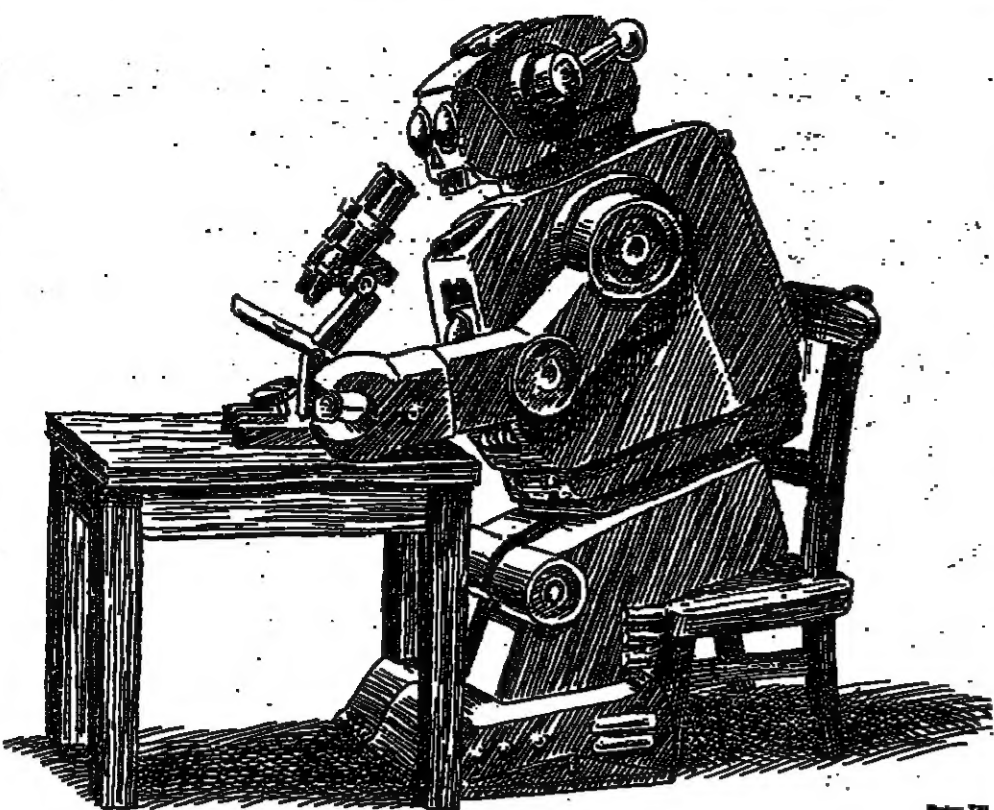
There is an element of "information activity" in any occupation. The estimate of the size of the fourth economic sector defines information occupations as those which have the production, processing or distribution of information as their primary purpose. To these are added jobs which build and maintain the information systems that the first group use, such as telephone network fitters, computer operators and office equipment maintenance men.

Information producers are divided between four groups of workers. First, scientific and technical workers engaged in research and development. Next, information gatherers who cover a variety of occupations mainly concerned with creating new sources of information. Then there are market search and coordination specialists who provide, via search activities, market information to buyers, sellers or both. Fourth, there are those providing consultative services by applying an existing body of knowledge to the particular needs of a client.

Information processors cover the administrative and managerial jobs who have to know how to interpret and exploit the information given to them. Clerical and related jobs which call upon an employee to manipulate information and data in a form appropriate to an employer are also in this category.

Information distributors include teachers, publishers and librarians, and a variety of jobs in the news and entertainment media. Finally come the so-called infrastructure occupations of those who install, operate and repair the machines and technologies to support information activities.

Before long, Japanese motorists will be guided electronically to their destinations by the shortest and least congested routes. The driver puts a seven-digit code, corresponding to his destination, into the car's microprocessor before setting out on the journey.



Then, whenever he approaches an intersection, a visual display unit on the dashboard will direct him to turn right or left or continue straight ahead. It also tells him graphically which lane to use for entering or leaving the junction.

In addition to these route instructions, the system will flash important information about road conditions ahead: for example, "road works" or "pedestrian crossing".

The Comprehensive Automobile Traffic Control System, as it is called, has already been tested successfully in an experiment covering 30 sq km of Tokyo. The results are now being evaluated by a government-industry committee, with a view to installing the system in other urbanized areas of Japan.

The system depends on loop antennae installed under the road about 200 metres from each intersection and connected to a roadside transmitter/processor unit. As a car drives over an antenna, a two-way digital communications link is established automatically between it and the roadside unit. The unit picks up the vehicle's destination and identification codes and transmits the routing and driving information back to it.

All the roadside units also transmit traffic data back to the system's control centre. The latter processes the information and deduces an overall pattern of traffic density and movement. That is relayed back to the roadside units and then, in the form of individual routing and driving guidance, to the cars passing by.

Before microcomputers were invented, scientists doing research in computer technology were casting an envious eye at molecular biologists unravelling the mechanism whereby the genetic code is stored and operated from the double helix of DNA in the nucleus of cells. In terms of information processing and storage, it makes even the latest microchips containing 250,000 transistors look like a dinosaur and slow.

But a small privately-owned research company, in Maryland, is experimenting with ideas for biological computers that exploit DNA coding. This intriguing development is described in the current issue of the magazine *Omni*. It is the idea, some may say fantasy, of Dr James McAlear who has assembled a small team of expert genetic engineers and biochemists to devise a prototype bioprocessor.

They hope to design computers that will assemble themselves by using the mechanism common to all

living things. These futuristic bioprocessors would also be used as implants to treat blindness or deafness caused by damage to tissues.

The attraction of exploiting biological processes is understandable because the biologist is looking at conductive velocities of impulses, circuit switching speeds and packing densities of information that leave the electronic engineer far behind.

Dr McAlear is not the only pioneer in this field. But his work of applying biological principles to manufacture the ultimate in integrated circuits began with an idea for building a conventional chip out of protein. In animals, proteins organize a vast array of biochemicals and assemble them into living organisms. Dr McAlear believes that a mechanism capable of creating order from that incredible complexity could serve as a basis for organizing simple microcircuits.

The transmission of newspaper pages and pictures via radio links and communications satellites for printing simultaneously in several places is having a growing impact on publishing. Even a famous newspaper like the *New York Times* is expanding into a national rather than a largely regional distributed publication. The first advance, however, was the introduction of web-offset printing to replace the traditional letterpress machines. But this was soon coupled with computerized photocomposition or what is now generally referred to in the printing industry as cold type. Web-

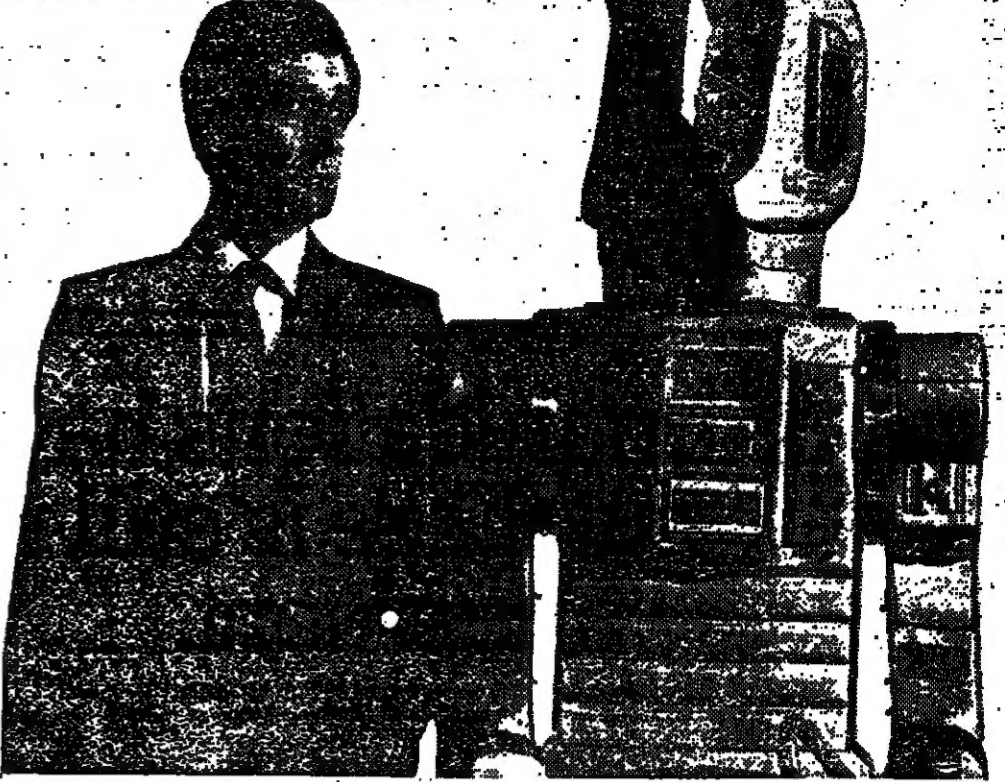
offset and computer photocomposition make natural marriage.

The web-offset machines available 15 years ago to start the revival for regional newspapers were not adequate for the scale of national newspaper operations. But the relentless increase in newsprint costs, distribution and competition from broadcasting services had galvanized publishers in America to use photocomposition, and to follow it with computer editing, even for large circulation titles. The past five years in particular has seen the arrival of video display terminals in newsrooms.

The technical details of various schemes are a bit academic, but the issues at stake between the traditional and electronic publisher are not. Both of them are now creating what is in effect a computer information warehouse. The first difference between printing and other manufacturing industries is that the raw materials held in the warehouse of the publisher are computerized data. Using that data to provide an electronic newspaper on demand by the customer will come as certainly as night follows day.

The second difference is that the products of the information warehouse are almost everlastingly reusable. So the electronic publisher has potential for an incredible choice of services. The product at the end of the day may be a set of photographic transparencies or polymer plates. The photographic images can be sent by facsimile transmission to three or four places for printing by web-offset. At the same time, specialized services can be offered to subscribers who want to order their own category of newspaper information to be printed at home or work. Once that idea gains ground, the future is wide open.

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## A place in the High Street

Information Technology is already beginning to take its place in the High Street. Shops are opening, equipped with word processors and high-speed printers, offering a fast service, mostly for local small businesses.

Precise figures for this new "cottage industry" use of information technology have not yet been compiled, but estimates suggest that some 200 operations from shop, or even front room, are functioning in the country. "But, from the number of inquiries I have had, the number is growing," said Mrs Andrea Wharton, a director of Keith Wharton Consultants, who produce a monthly International Word Processing Report.

"Machinery is easier to come now and prices are coming down, making it easier for, say, the married woman or disabled person, to run a business from home."

Laura Tatham, a former journalist specializing in computers, for many years, opened Wordpro Word Processing Service, in a former tailor's shop in Essex Road, North London, six months ago.

Her clients range from a local cheese importer, merchant bank, solicitor, firm of international consultants, to some young people who have asked her to prepare and

print their job application letters and curriculum vitae. She has in her growing hoard of floppy discs, procedure manuals, a complete novel, newsletters, a catalogue of rare antique books, leases and several personalized mailings for local companies. She has also transcribed a technical seminar from audio tape for one customer.

"The potential is almost limitless," she says. But, if somebody strolls in and says "do you do single letters?" she does it for them while they wait.

Local people, with their shopping bags, often walk past her bright green shop with windows full of geraniums, and finally come in and ask "What do you do?"

Miss Tatham usually lets people look over her shoulder as she keys in, say, a letter on her Compucorp wordprocessor - demonstrating how to make instant corrections or edit the text on the screen, how to check spelling, errors by switching in a stored dictionary. Then she shows how, by pushing a button the Diablo printer alongside her produces the letter at a speed of 45 characters a second, or half a minute for a full A4 page.

Charges vary, but a typical price would be £2.75 to set up a full A4 page, 550 words, in the word processor plus 30p

for a printed page. "At first sight this might sound expensive, but it is a lot cheaper than hiring a temporary secretary," she says.

She employs Marie Bryant, 18, who operates a second word processor from her wheelchair. "Marie has been on a work experience course," said Miss Tatham, "but this is her first job. Because she is disabled the computer company sent someone down here to train her. She picked it up amazingly quickly. I'm always hearing that word processing and information technology are going to mean unemployment, but here is a good example of it creating work. It is ideal for the disabled, an area where there is a crying need for new employment opportunities."

Wordplex, the company which makes and sells word processors, operate about 35 service shops, on a franchise system. "We got going last year and expect by the end of this year to have about 60", says Mr Michael Freer.

"It is one of the best ways of spreading the gospel of information technology. I've just heard about a vicar who has had his past list done on a word processor. A year ago he wouldn't have known what a word processor was, let alone think of using it."

Rita Marshall



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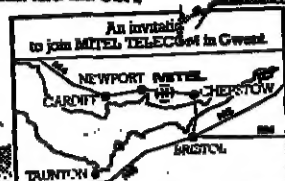
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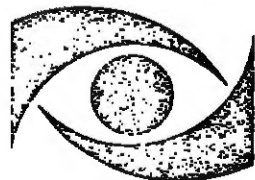
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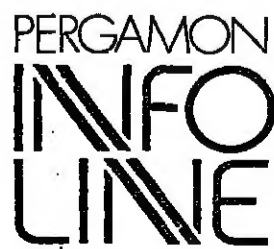
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